

FIG. 1A

gggcaggaagacggcgctgcccgaggagc																				-153
ggggcggggcgggcgcgcgggggagcgggcggcgggcgggagccagggcgggcgggcgggcgggcgggcg																				-77
aagagggcgggcgggcgcgctccggccgggtctgcggcggttggccttggctttggctttggcggcgggcggtggagaag																				-1
ATG	CTG	CAG	TCC	CTG	GCC	GGC	AGC	TCG	TGC	GTG	CGC	CTG	GTG	GAG	CGG	CAC	CGC	TCG		57
M	L	Q	S	L	A	G	S	S	C	V	R	L	V	E	R	H	R	S		19
GCC TGG TGC TTC GGC TTC CTG GTG CTG GGC TAC TTG CTC TAC CTG GTC TTC GGC GCA																				114
A	W	C	F	G	F	L	V	L	G	Y	L	L	Y	L	V	F	G	A		38
GTG	GTC	TTC	TCC	TCG	GTG	GAG	CTG	CCC	TAT	GAG	GAC	CTG	CTG	CGC	CAG	GAG	CTG	CGC		171
V	V	F	S	S	V	E	L	P	Y	E	D	L	L	R	Q	E	L	R		57
AAG	CTG	AAG	CGA	CGC	TTC	TTG	GAG	GAG	CAC	GAG	TGC	CTG	TCT	GAG	CAG	CAG	CTG	GAG		228
K	L	K	R	R	F	L	E	E	H	E	C	L	S	E	Q	Q	L	E		76
CAG	TTC	CTG	GGC	CGG	GTG	CTG	GAG	GCC	AGC	AAC	TAC	GGC	GTG	TCG	GTG	CTC	AGC	AAC		285
Q	F	L	G	R	V	L	E	A	S	N	Y	G	V	S	V	L	S	N		95
GCC TCG GGC AAC TGG AAC TGG GAC TTC ACC TCC GCG CTC TTC TTC GCC AGC ACC GTG																				342
A	S	G	N	W	N	W	D	F	T	S	A	L	F	F	A	S	T	V		114
CTC	TCC	ACC	ACA	GGT	TAT	GGC	CAC	ACC	GTG	CCC	TTG	TCA	GAT	GGA	GGT	AAG	GCC	TTC		399
L	S	T	T	G	Y	G	H	T	V	P	L	S	D	G	G	K	A	F		133
TGC	ATC	ATC	TAC	TCC	GTC	ATT	GGC	ATT	CCC	TTC	ACC	CTC	CTG	TTC	CTG	ACG	GCT	GTG		456
C	I	I	Y	S	V	I	G	I	P	F	T	L	L	F	L	T	A	V		152
GTC	CAG	CGC	ATC	ACC	GTG	CAC	GTC	ACC	CGC	AGG	CCG	GTC	CTC	TAC	TTC	CAC	ATC	CGC		513
V	Q	R	I	T	V	H	V	T	R	R	P	V	L	Y	F	H	I	R		171
TGG	GGC	TTC	TCC	AAG	CAG	GTG	GTG	GCC	ATC	GTC	CAT	GCC	GTG	CTC	CTT	GGG	TTT	GTG		570
W	G	F	S	K	Q	V	V	A	I	V	H	A	V	L	L	G	F	V		190
ACT	GTG	TCC	TGC	TTC	TTC	TTC	ATC	CCG	GCC	GCT	GTC	TTC	TCA	GTC	CTG	GAG	GAT	GAC		627
T	V	S	C	F	F	F	I	P	A	A	V	F	S	V	L	E	D	D		209

FIG. 1B-1

TGG AAC TTC CTG GAA TCC TTT TAT TTT TGT TTT ATT TCC CTG AGC ACC ATT GGC CTG	684
W N F L E S F Y F C F I S L S T I G L	228
GGG GAT TAT GTG CCT GGG GAA GGC TAC AAT CAA AAA TTC AGA GAG CTC TAT AAG ATT	741
G D Y V P G E G Y N Q K F R E L Y K I	247
GGG ATC ACG TGT TAC CTG CTA CTT GGC CTT ATT GCC ATG TTG GTA GTT CTG GAA ACC	798
G I T C Y L L L G L I A M L V V L E T	266
TTC TGT GAA CTC CAT GAG CTG AAA AAA TTC AGA AAA ATG TTC TAT GTG AAG AAG GAC	855
F C E L H E L K K F R K M F Y V K K D	285
AAG GAC GAG GAT CAG GTG CAC ATC ATA GAG CAT GAC CAA CTG TCC TTC TCC TCG ATC	912
K D E D Q V H I I E H D Q L S F S S I	304
ACA GAC CAG GCA GCT GGC ATG AAA GAG GAC CAG AAG CAA AAT GAG CCT TTT GTG GCC	969
T D Q A A G M K E D Q K Q N E P F V A	323
ACC CAG TCA TCT GCC TGC GTG GAT GGC CCT GCA AAC CAT TGA gcgtaggatttgttgcatt	1030
T Q S S A C V D G P A N H *	337
atgctagagcaccagggtcaggggtgcaaggaagaggcttaagtatgttcattttttatcagaatgcaaaagcgaaaa	1106
ttatgtcactttaagaaatagctactgtttgcaatgtcttattaaaaaacaacaaaaaagacacatggaacaaag	1182
aagctgtgacccagcaggatgtctaataatgtgaggaaatgagatgtccacctaataatcatatgtgacaaaatta	1258
tctcgaccttacataggaggagaataacttgaagcagtatgctgctgtggttagaagcagattttataacttttaact	1334
ggaaactttgggggtttgcatttagatcatttagctgatggctaaatagcaaaattttatatttagaagcaaaaaaa	1410
aaagcatagagatgtgttttataaataggtttatgtgtactggtttgcattgtacccacccaaatgattatttttg	1486
gagaatctaagtcaaactcactattttataatgcataggtaaccattaactatgtacatatataaagtataaatatgtt	1562
tatattctgtacatatggttttaggtcaccagatcctagtgttagttctgaaactaagactatagatatattttgtttct	1638
tttgattttctctttataactaaagaatccagagttgctacaataaaataagggggaataataaaaaaaaaaaaaa	1712

FIG. 1B-2

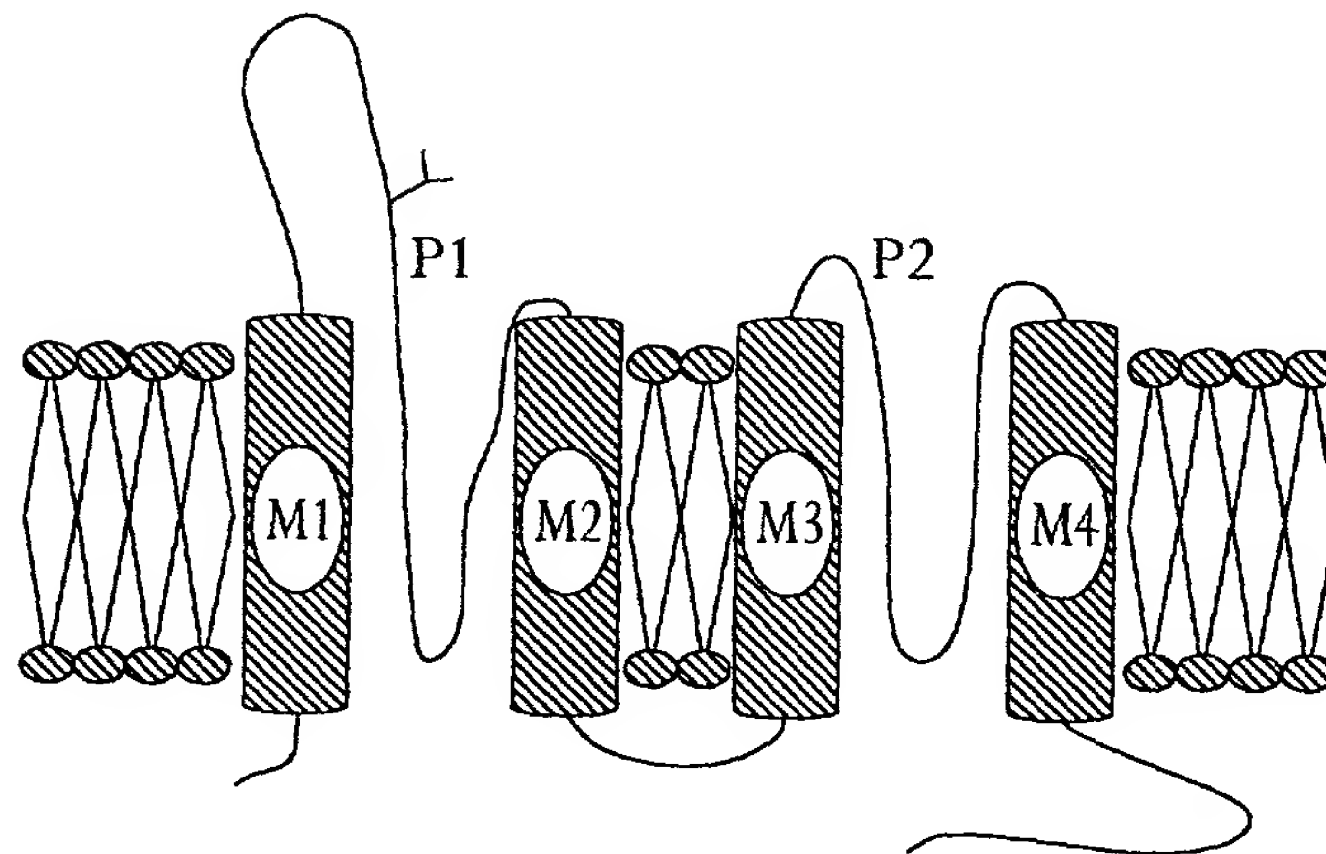
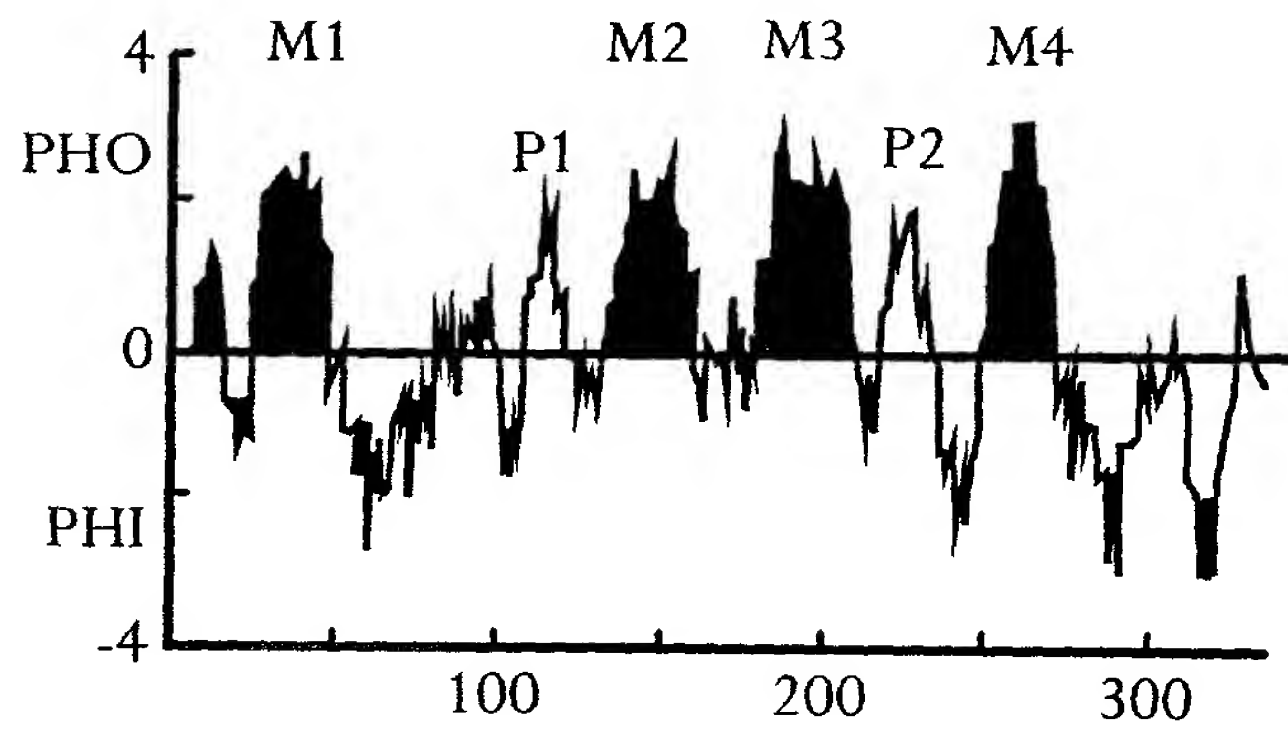


FIG. 1C

	1	14	27
TWIK-1 P1	FTSALFFASTVLSTTGYGHTVPLSDGG		
TWIK-1 P2	ELESFYECFLSLSTTGLGDYVPGEYN		
TOK1 P2	YFNCIYECFLCLLTGTYGDYAPRTGAG		
TOK1 P1	YGNALYECTVSLLTVGLGDTLPKSVG		
Slo	YWTCVYFLIVTMTSTVGYGDMVYCETVLG		
Shaker	IPDAFWWAVVTMTTVGYGDMTPVGFWG		
Shab	IPEAFWWAGITMTTVGYGDTCPITALG		
Shal	IPAAFWYTIIVTMTTIGYGDMVPETTAG		
Shaw	IPLELWAAIVTMTTVGYGDMARKTYIG		
KAT1	YVTALYWSITTLTTTGYGDFHAENPRE		
AKT1	YVTSMYWSITTLTTVGYGDTHPVNTKE		
eag	YVTALYFTMTCTMTSVGEGNVAAETDNE		
ROMK1	MTSAFLFSLETQVTIGYGFRFVTEQCA		
IRK1	FTAAFLFSIETQTTIGYGFRCVTDECP		
GIRK1	EPSAFLFFIETEATIGYGYRYITDKCP		

FIG. 2A

TWIK-1	1	MLQSLAGSSCVREVE-----RHRSANCF--GF-----LVLGY
f17c8	1	MYTDEGEYSGDTDHGGSTMQKMSPNTRONFRQNVNVVVCISAA--TL--
M110-2	1	MTVSMEENSKIQMLSATSKDKKVATDRSLLNKYHLGPLALHTGLVLS
TWIK-1	31	LEYLVFGAVVFSSVELPYEDLLROE-----LRKLKRRFLEEHEC---L
f17c8	47	LVENLIGAGIF-----YLAETONSSES
M110-2	49	VTYALGGAYEFLSEHP-EELKRREKAIREFQDLKQOQMGENTITSGIEN
TWIK-1	71	SEQOLEQFLGRVL-----EASNGVSVLSNASGNWNW--DFTSALF
f17c8	69	LNENSEV--SKCLHNLPIGGKITAEMKSKLGKCEKSSRIDGEFGKALF
M110-2	96	SEQSEETTKKLLMLEDAHNAHAEEYFFLNRELPKDMW--TFSSAIN
P1		
TWIK-1	110	FASTVLESTTGYGHTVPESDGGKAFCIL-YSVIGIPFTLLFLTAVVORI
f17c8	115	FSWTEYSTVGYGSEYPHSTLGRYLTIF-YSLMIPVFIAFKFEFGTEL
M110-2	142	FTTTTVLPVGYGYLFPVSAYGR-MCLLAYALLGIPETTLVTMAETGKEA
TWIK-1	157	TVH---VTRRPVL-----YFHERWGESKOVVAIVHAVLLGEVTVSCFF
f17c8	162	AHFLVVVENRTRLAVKKAYKLS-ONPENAETPSNSLOHDYLFSSIL
M110-2	189	AQL---VTR-----W-FGDNNMAIPAAITV-----CLIL
P2		
TWIK-1	197	FL-PAAVFS---VL--EDDWNELSEFKFCFISLSTIGLGDYVRGEGYN
f17c8	209	LLCSLGLSSSAEFSSLENISYLSSVYRGITMFLIGLGDYPTN---
M110-2	213	FAYPLVVGf---LDCSTSNITYLDSVYFSITSIFTIGFGDITP----
TWIK-1	239	QKFRLEYKIDGECYLELGLTAMEVDETFC-----ELHELKKEP-----
f17c8	254	-----LWVWFSGYCMLFLISDVLENOIFYFCQARVRYFFHILARKEL
M110-2	253	-----DMNVLDHMLVLELAVGVILVTITLDTIVA---AEMIDRVHYMGRIYV
TWIK-1	278	-----KMEYVKKDKDEDQVHILEHDOL-----SESSSETDOAAGMKED
f17c8	295	LLRE-EDDGFQLETIVSLOHEPIINSQCMPSL-----VLDCEKEELDND
M110-2	294	KAKELAGKMFOLAQSENKKGGLVSGVGOLHALAREFGMLVGREEVDKTQ
TWIK-1	315	QKONEPFVAT-----QSSACVDGPANH-----
f17c8	338	EKLISSEST-----
M110-2	342	EDGIIAFSPDVMGLEFMDTLISIYSRRSRRSAENSARNLFLS

FIG. 2B

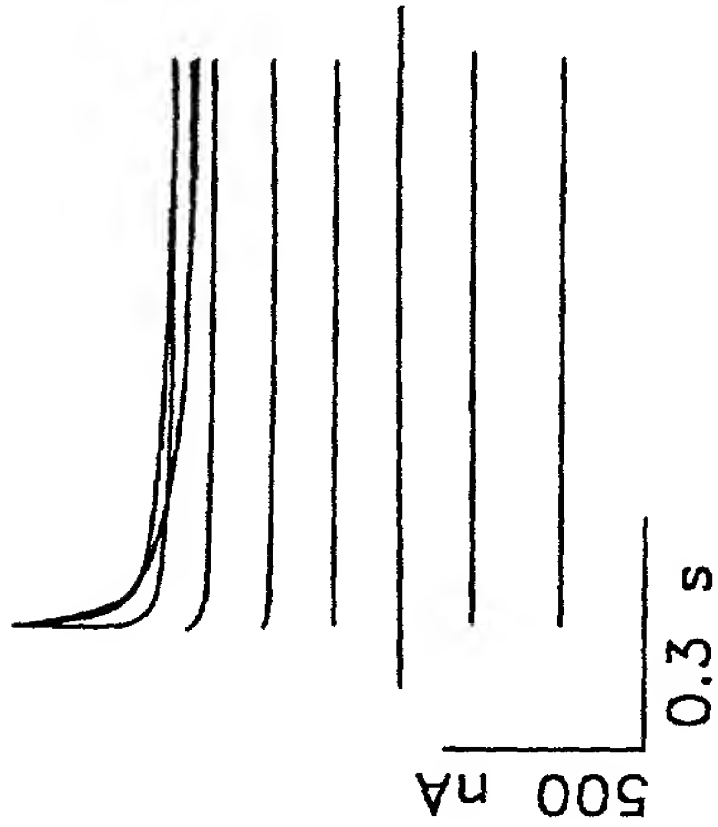


FIG. 3A

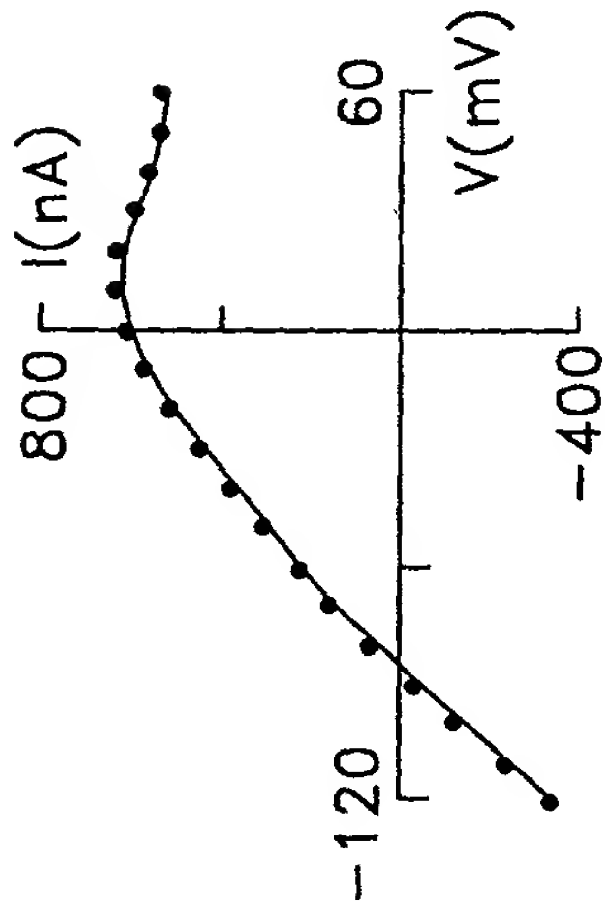


FIG. 3B

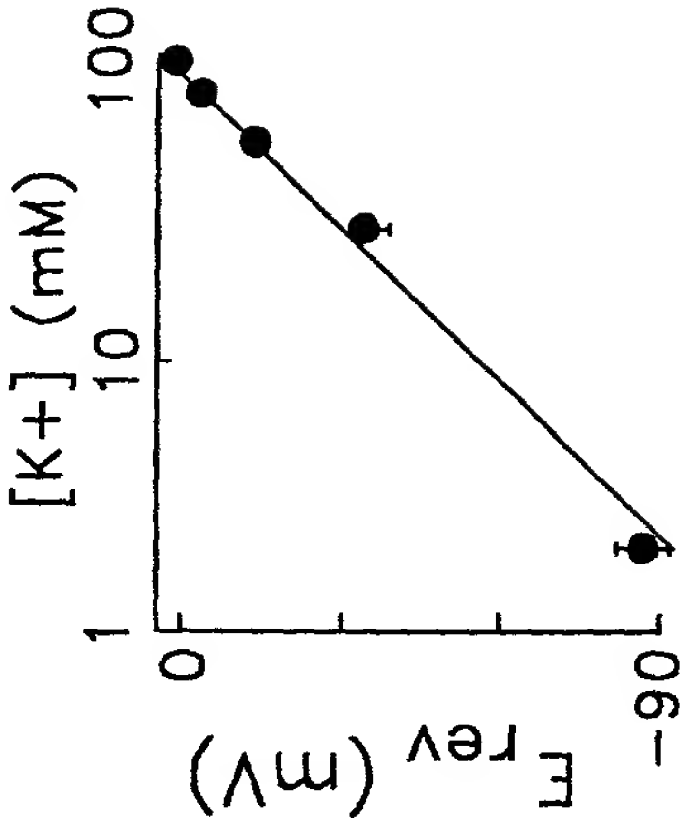


FIG. 3C

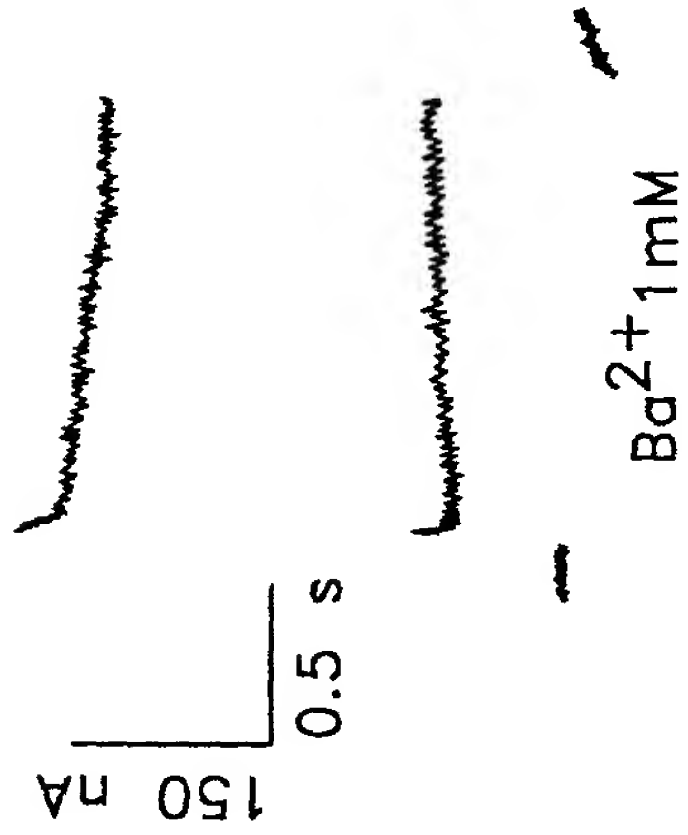


FIG. 3D

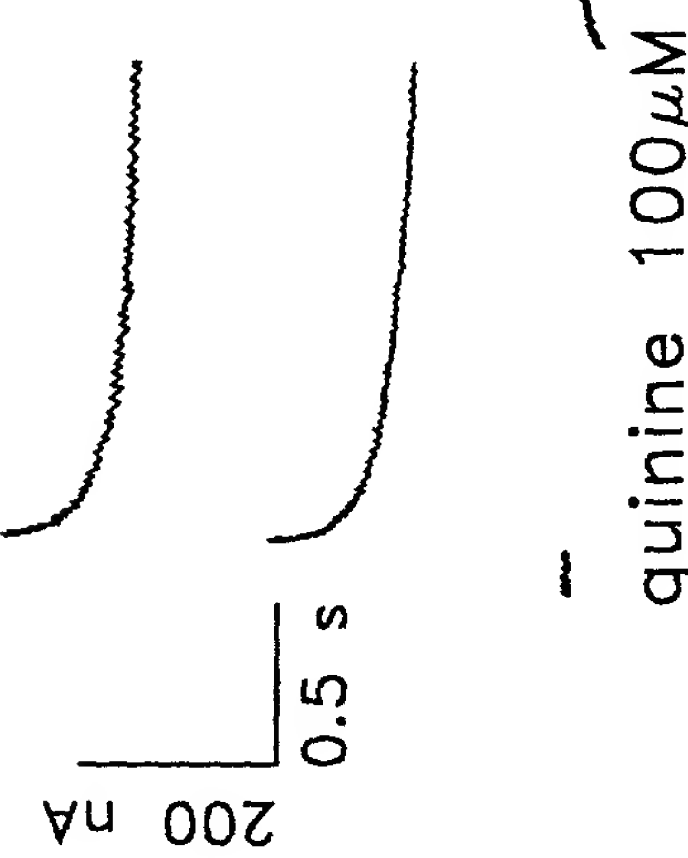


FIG. 3E

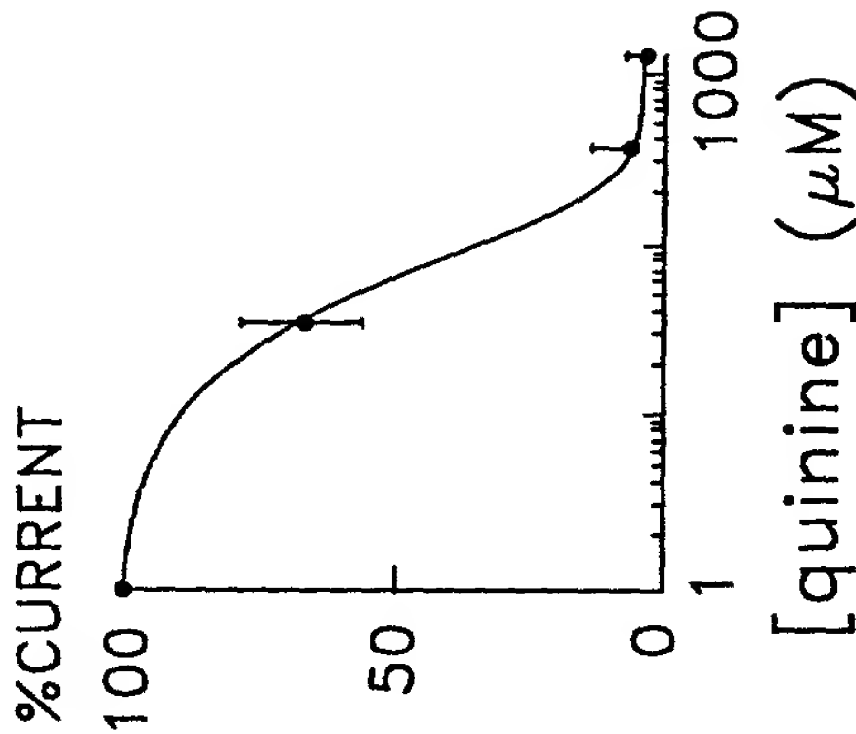


FIG. 3F

FIG. 4A

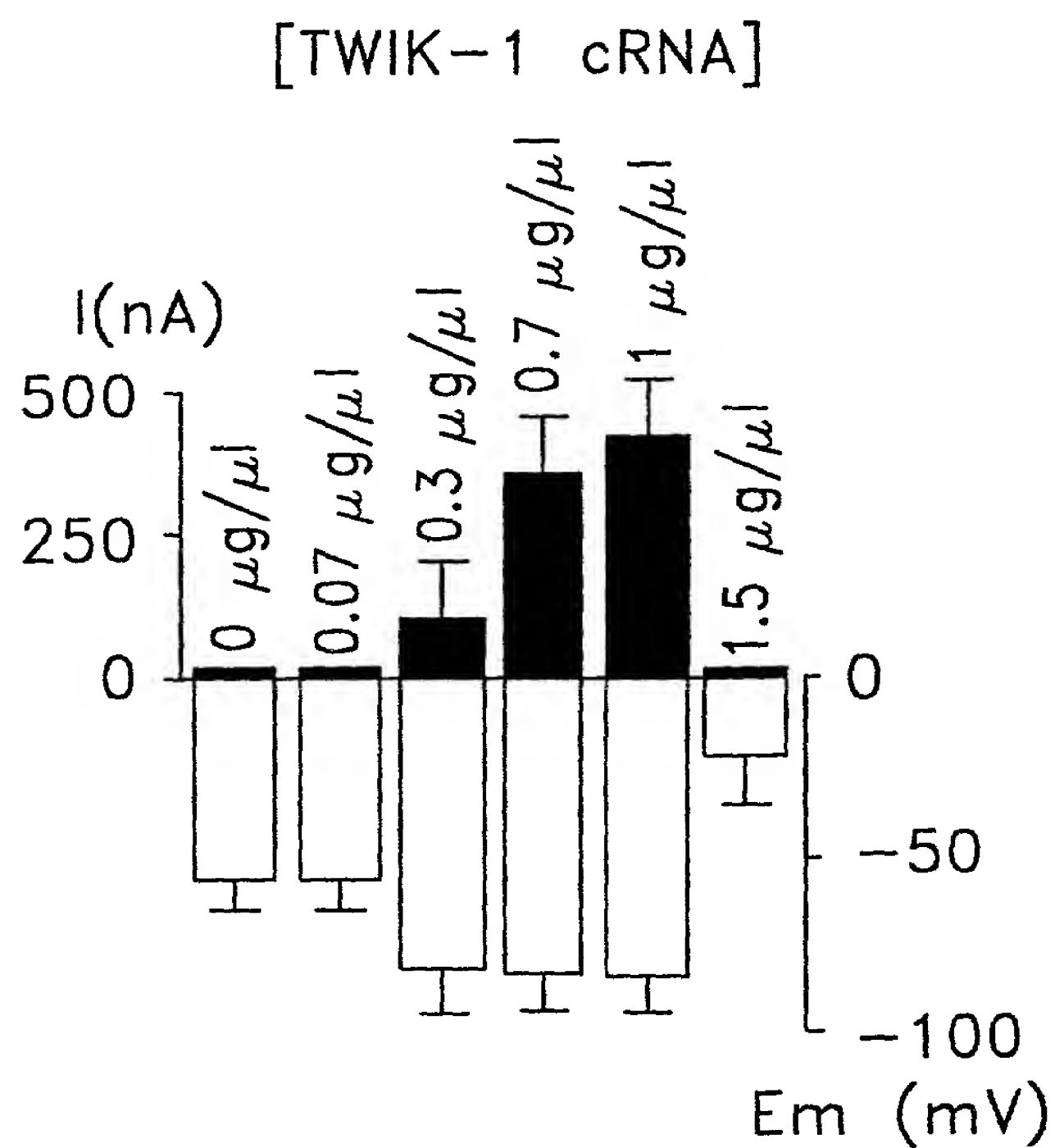


FIG. 4B

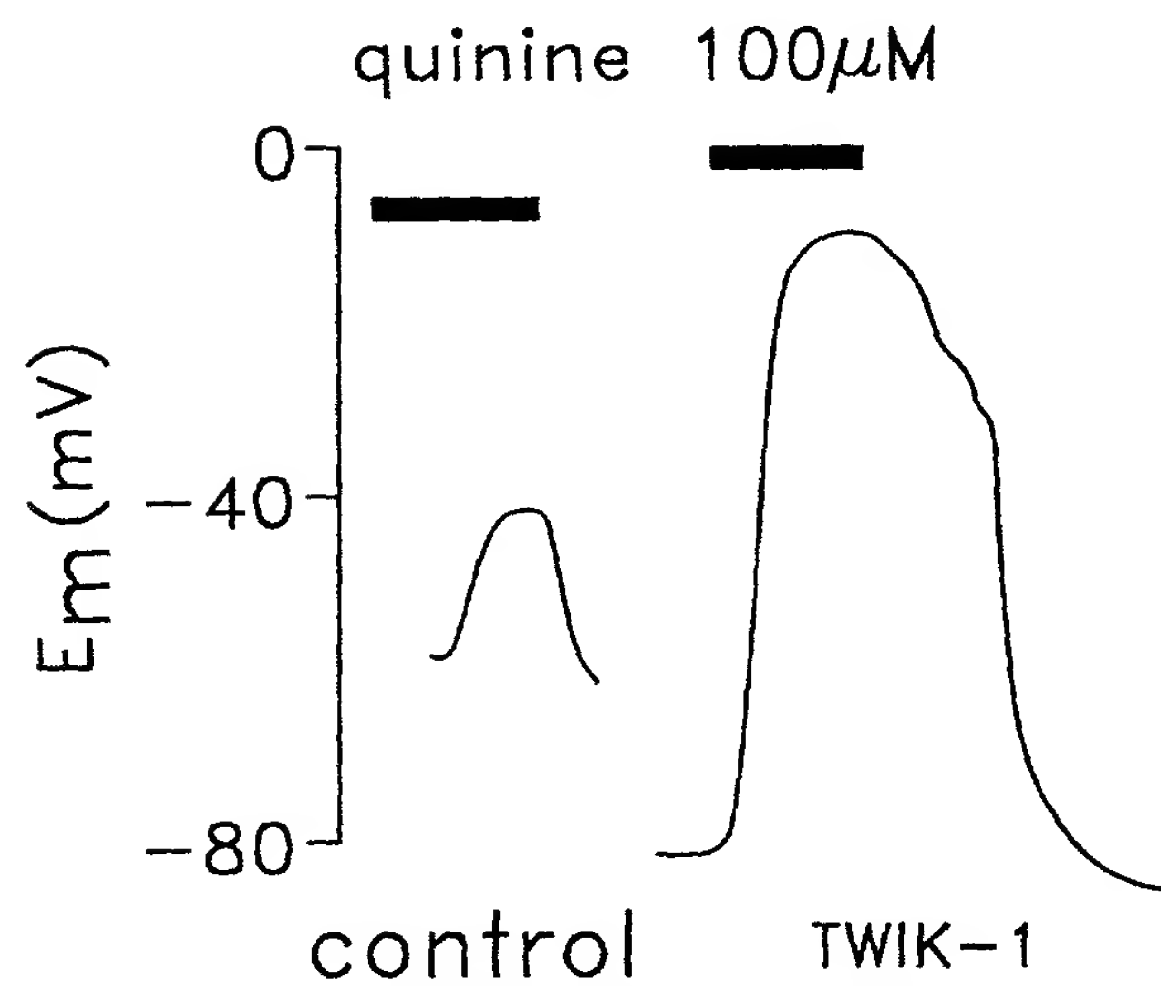
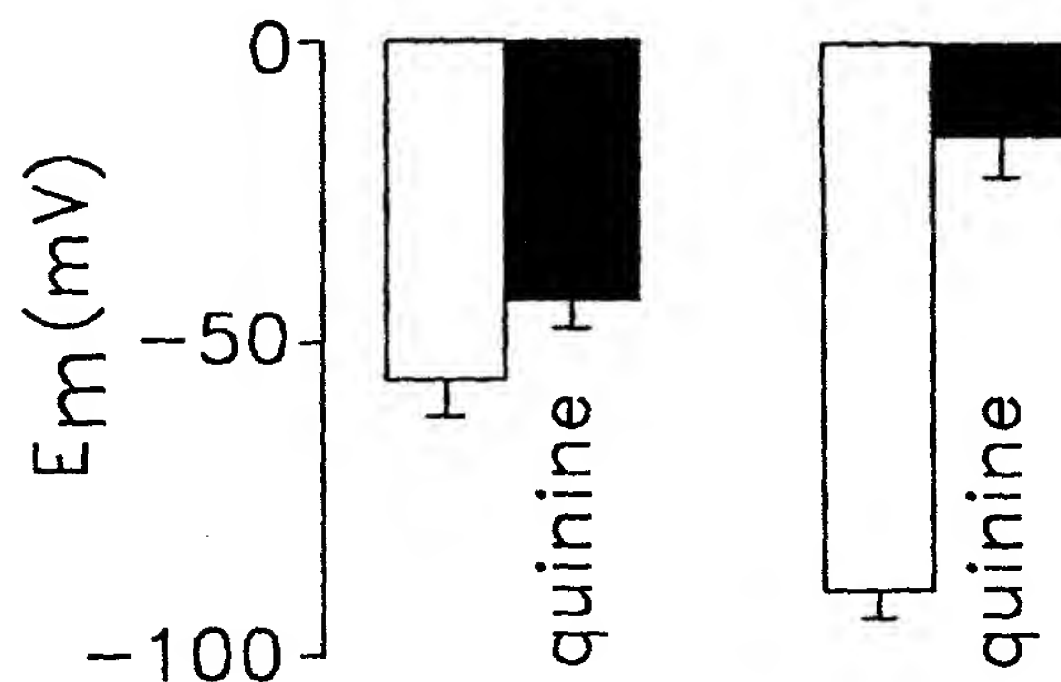


FIG. 4C



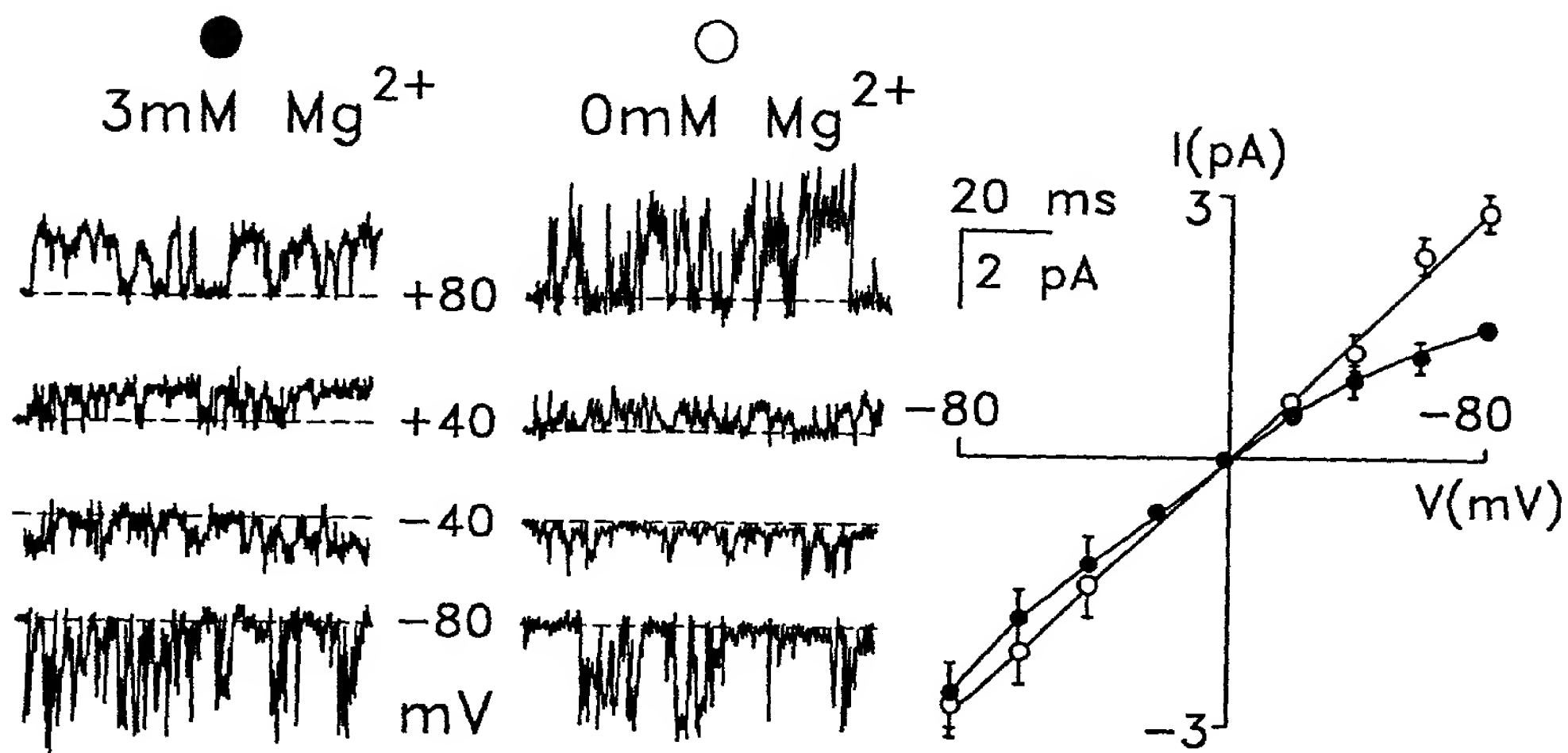


FIG. 5A

FIG. 5B

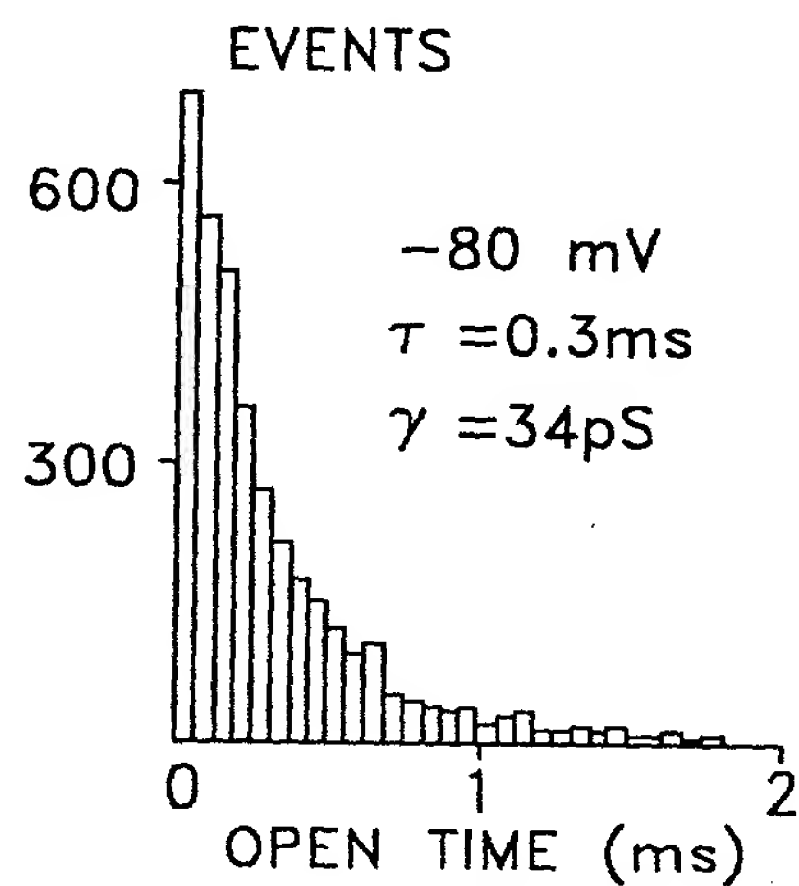
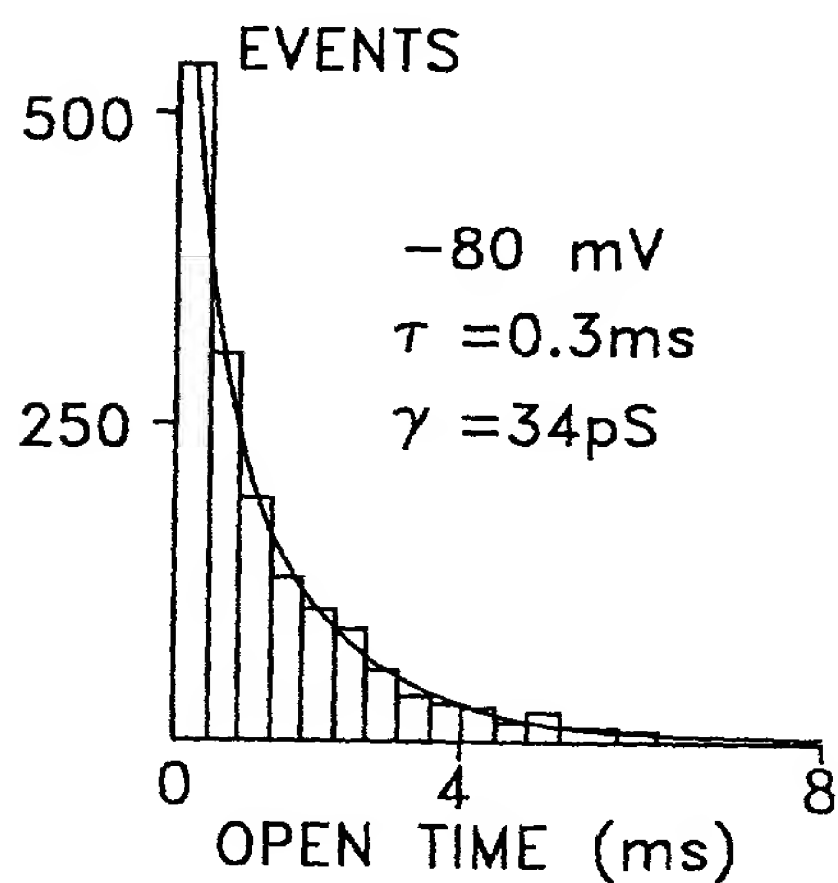
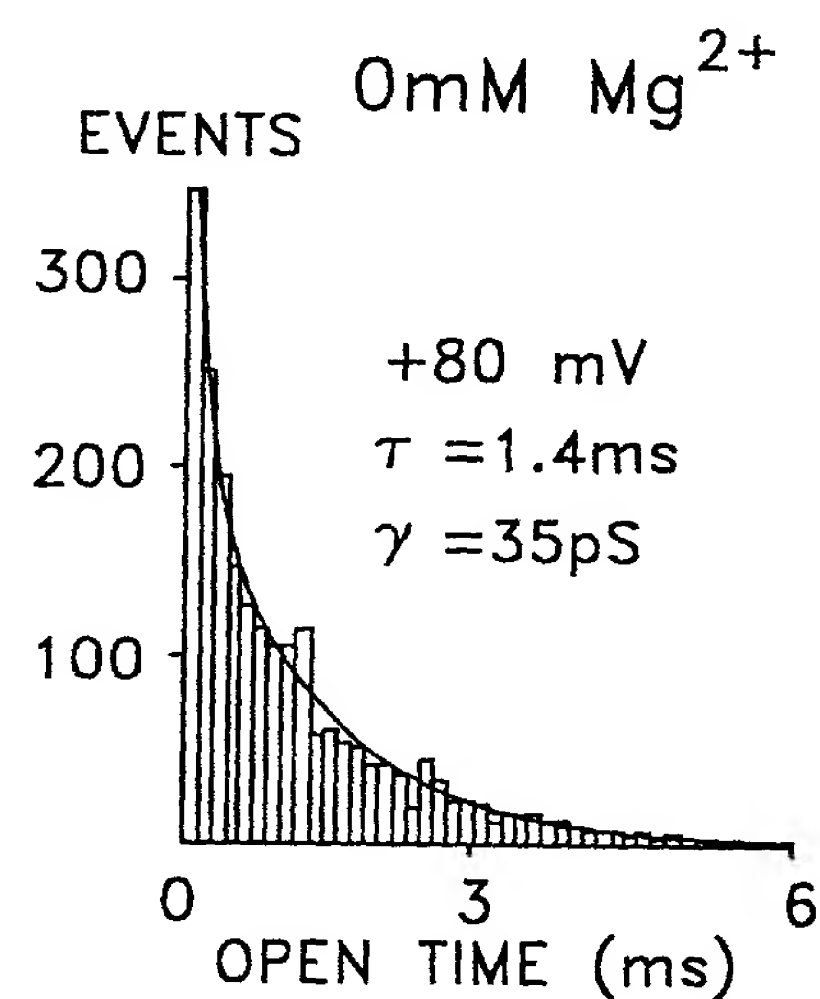
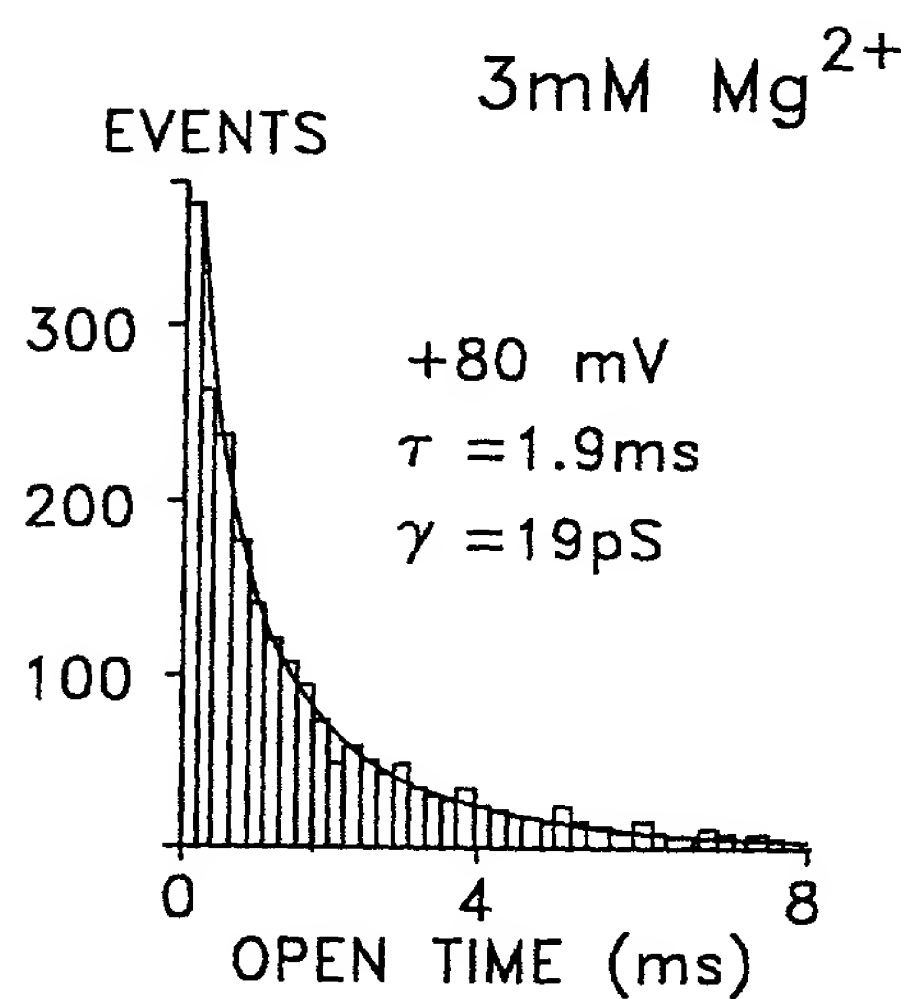


FIG. 5C

FIG. 5D

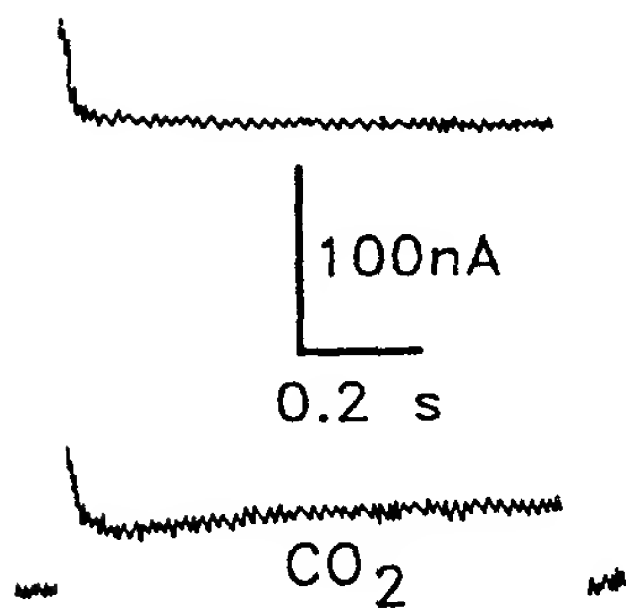


FIG. 6A

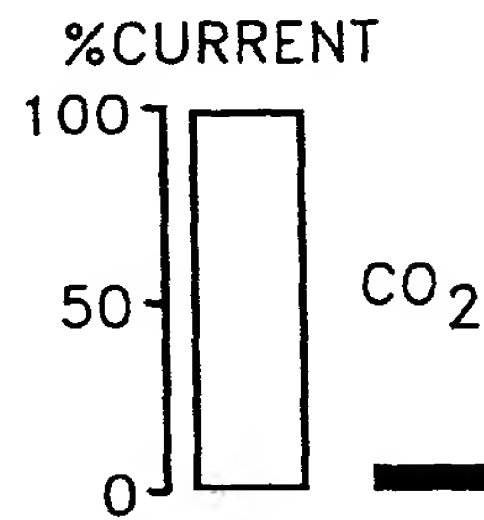


FIG. 6B

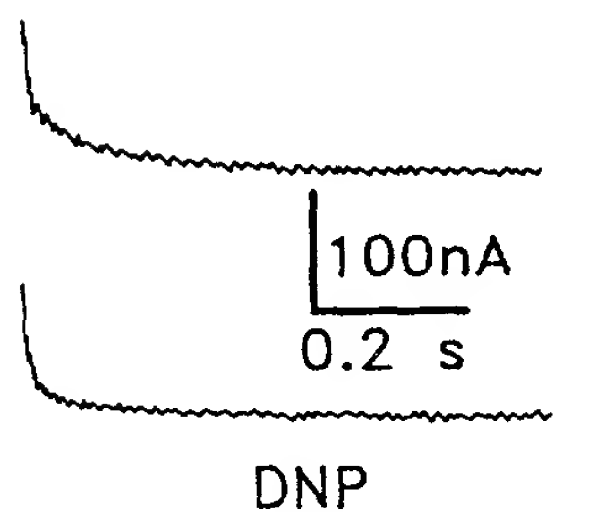


FIG. 6C

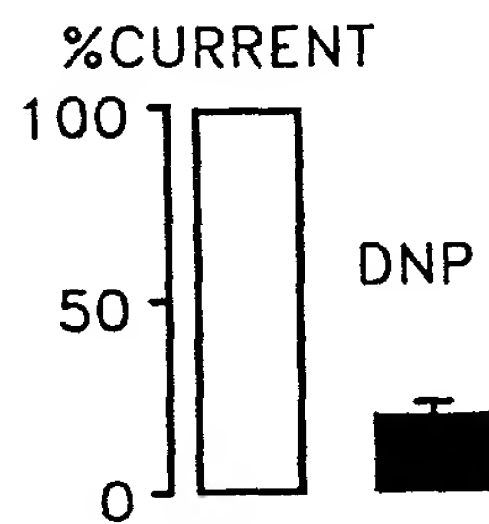


FIG. 6D

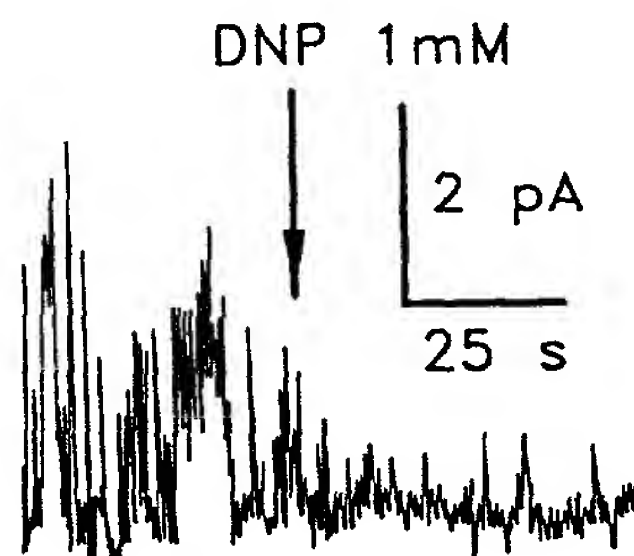


FIG. 6E

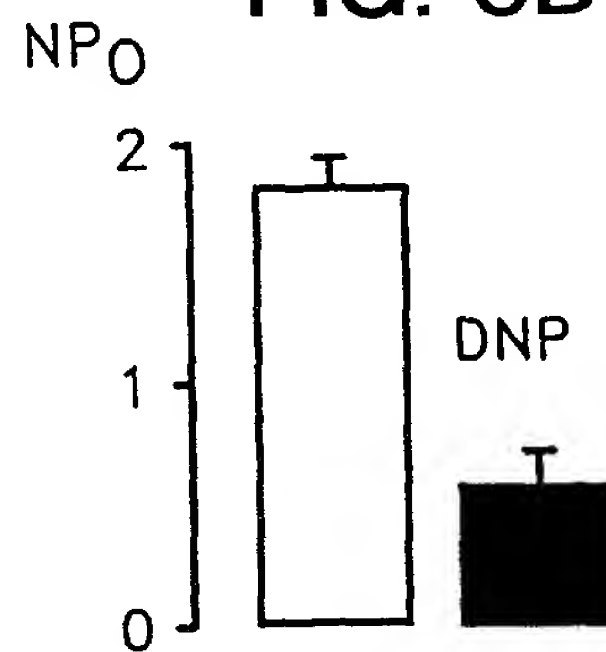


FIG. 6F

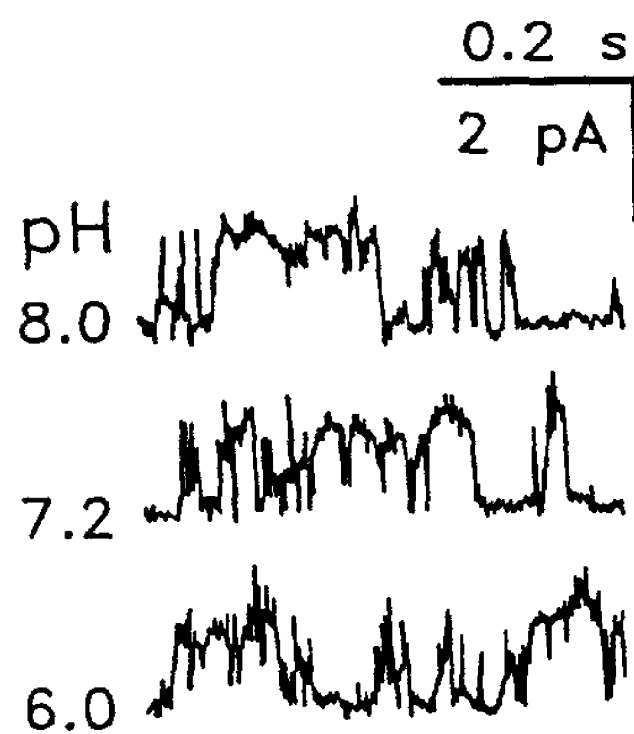


FIG. 6G

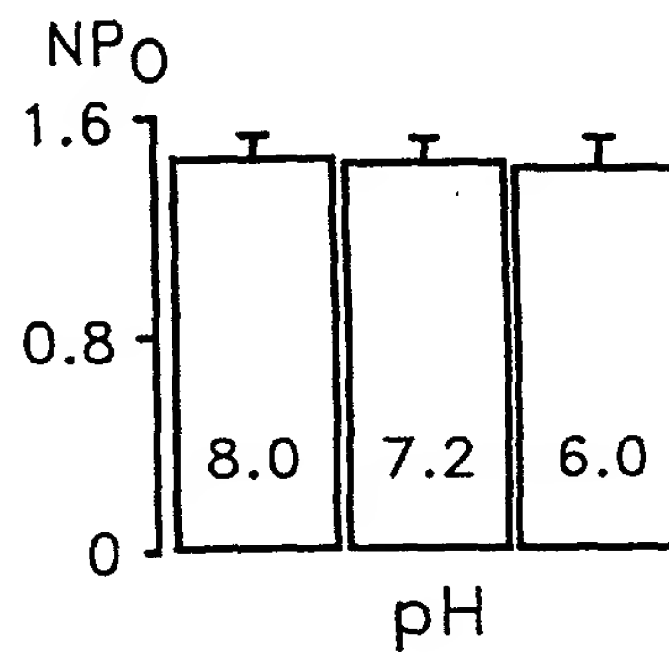


FIG. 6H

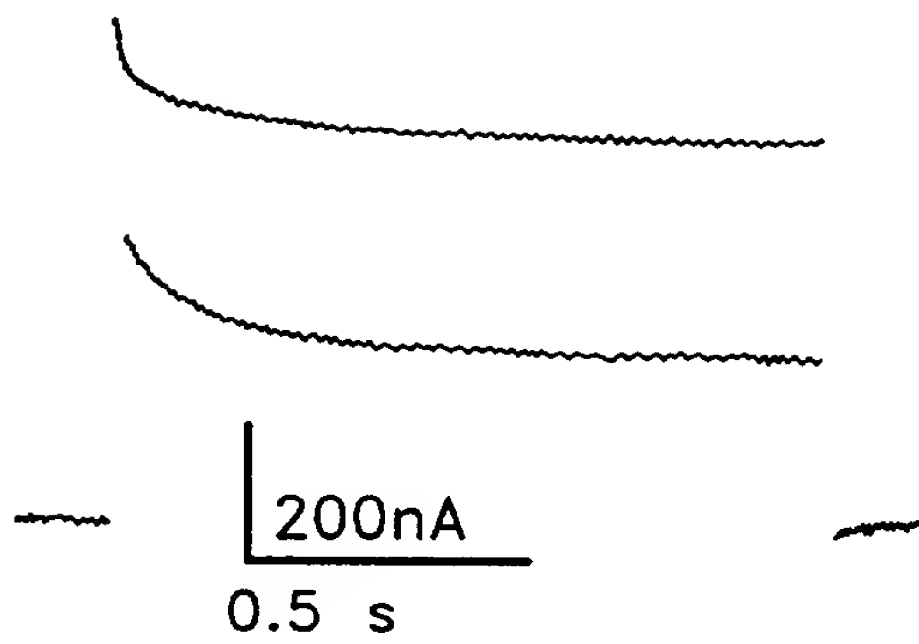


FIG. 7A

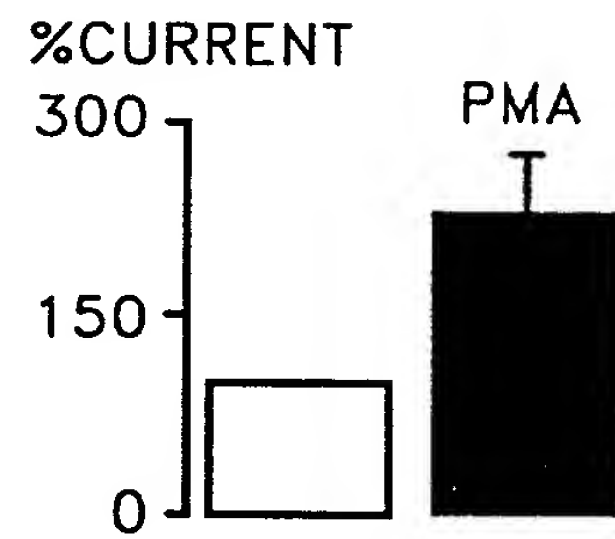


FIG. 7B

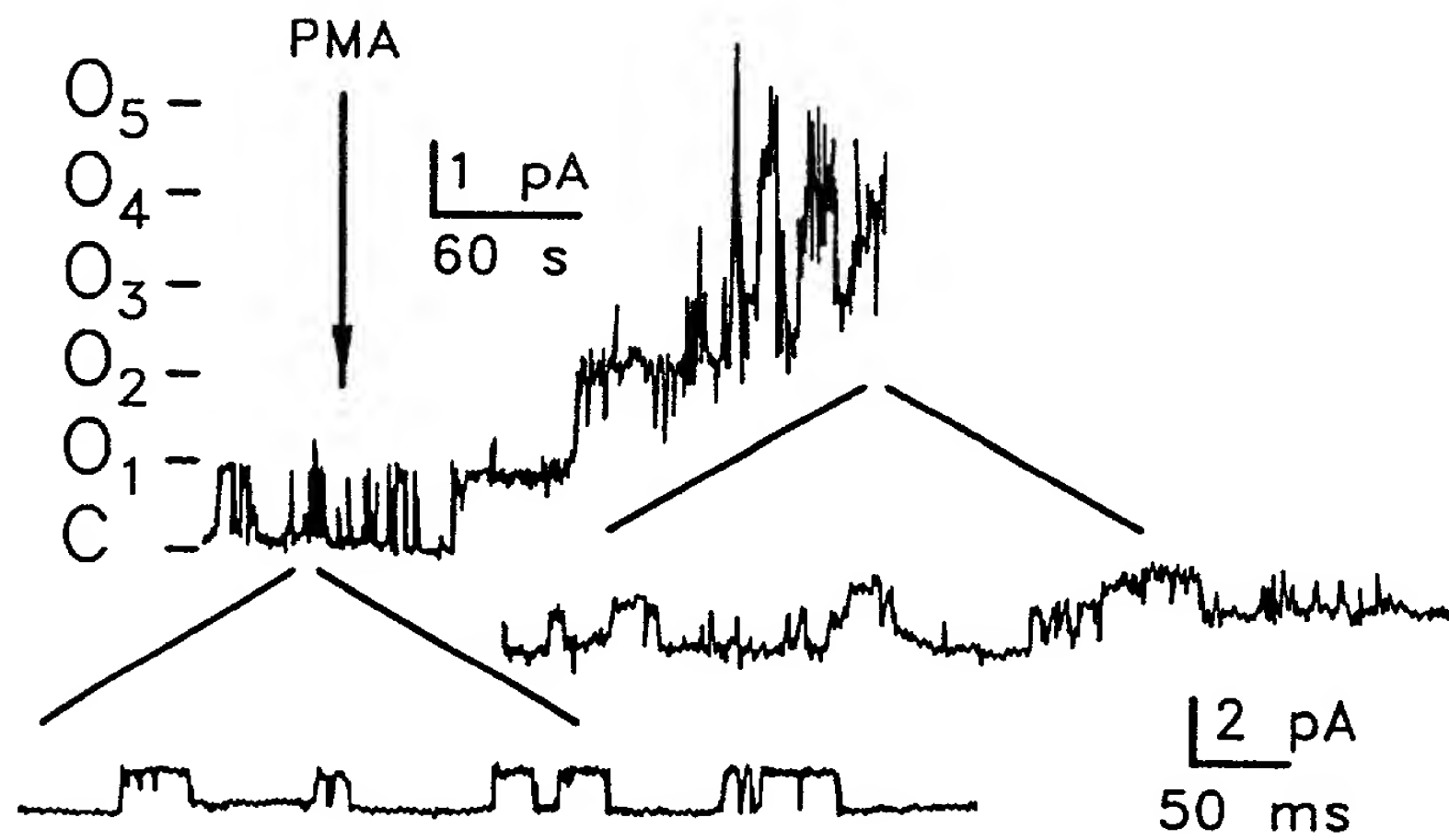


FIG. 7C



FIG. 7D

THE



ACC	ATG	AAC	GCC	GAG	GAC	GAG	AAG	CGC	GAC	GCC	GAG	CAC	CGC	GCG	CTG	CTC	ACG	CGC	798
T	M	N	A	E	D	E	K	R	D	A	E	H	R	A	L	L	T	R	266
T	M	N	A	E	D	E	K	R	D	A	E	H	R	A	L	L	T	H	
AAC	GGG	CAG	GCG	GGC	GGC	GGC	GGA	GGG	GGT	GGC	AGC	GCG	CAC	ACT	ACG	GAC	ACC	GCC	855
N	G	Q	A	G	G	G	G	G	G	G	S	A	H	T	T	D	T	A	285
N	G	Q	A	Y	G	L	G	G	L	S	C	L	S	G	S	L	G	D	
TCA	TCC	ACG	GCG	GCA	GCG	GGC	GGC	GGC	GGC	TTC	CGC	AAC	GTC	TAC	GCG	GAG	GTG	CTG	912
S	S	T	A	A	A	G	G	G	G	F	R	N	V	Y	A	E	V	L	304
<u>VRPRDPV</u>	<u>TC</u>	<u>AA</u>	A	A	G	<u>GVGVGVGGS</u>	G	F	R	N	V	Y	A	E	V	L			
CAC	TTC	CAG	TCC	ATG	TGC	TCG	TGC	CTG	TGG	TAC	AAG	AGC	CGC	GAG	AAG	CTG	CAG	TAC	969
H	F	Q	S	M	C	S	C	L	W	Y	K	S	R	E	K	L	Q	Y	323
H	F	Q	S	M	C	S	C	L	W	Y	K	S	R	E	K	L	Q	Y	
TCC	ATC	CCC	ATG	ATC	ATC	CCG	CGG	GAC	CTC	TCC	ACG	TCC	GAC	ACG	TGC	GTG	GAG	CAG	1026
S	I	P	M	I	I	P	R	D	L	S	T	S	D	T	C	V	E	Q	342
S	I	P	M	I	I	P	R	D	L	S	T	S	D	T	C	V	E	H	
AGC	CAC	TCG	TCG	CCG	GGA	GGG	GGC	GGC	CGC	TAC	AGC	GAC	ACG	CCC	TCG	CGA	CGC	TGC	1083
S	H	S	S	P	G	G	G	G	R	Y	S	D	T	P	S	R	R	C	361
S	H	S	S	P	G	G	G	G	R	Y	S	D	T	P	S	H	P	C	
CTG	TGC	AGC	GGG	GCG	CCA	CGC	TCC	GCC	ATC	AGC	TCG	GTG	TCC	ACG	GGT	CTG	CAC	AGC	1140
L	C	S	G	A	P	R	S	A	I	S	S	V	S	T	G	L	H	S	380
L	C	S	G	T	Q	R	S	A	I	S	S	V	S	T	G	L	H	S	
CTG	TCC	ACC	TTC	CGC	GGC	CTC	ATG	AAG	CGC	AGG	AGC	TCC	GTG	TGA	ctgccccgagggacc				1200
L	S	T	F	R	G	L	M	K	R	R	S	S	V	*					395
L	A	A	F	R	G	L	M	K	R	R	S	S	V						
tggagcacctggggg	cgcgggg	cgggg	gacccct	gctggg	aggccagg	agactg	ccccct	gctgcctt	ctgccc	agtg	1276								
ggacccccgcacaac	atccctc	accactct	cccccc	cagaccccc	atctccg	actgtgcct	gcttg	caccagc	cgga	1352									
ggaggccggg	ctctgagg	acccctgg	ggggcccc	atcgga	gccctg	caaattcc	gagaaat	gtgaaact	tggtggg	1428									
tcaggaggaa	aggcaga	agctggg	agcctcc	cttccctt	tgaaaat	ctaaga	agctccc	agtcctc	agagacc	ct	1504								
gctggtacc	acacccc	accttcg	gagggg	acttcat	gttccgt	gtacgtt	tgatctct	atttata	acctctg	tct	1580								
gctaggtct	cccacctt	cccttgg	ttccaaa	agccagg	gtgtctat	gtccaag	tacccc	tactcag	ccccact	cc	1656								
cccttcctc	atcccc	agctgtg	tctccca	acctccct	tcgtgtt	gttttgc	atggc	tttg	cagttat	ggagaa	agt	1732							
gaaaccc	cagcag	tccctaa	agctgg	tcccc	agaaag	caggac	agaaag	aggagg	gacagg	cagcag	caggagg	1808							
gcgagct	gggagg	caggagg	cagcg	gcctgt	cagtc	ctgcaga	atgg	tgcact	ggagg	ttcaag	ctaact	ggcctc	1884						
cagccac	atttct	catagc	aggtagg	acttcag	ccttcc	agacact	gccctt	agaatct	ggaac	agaag	acttc	aga	1960						
ctcacc	ataatt	gtgata	attaccc	actctt	aaattt	gtcgag	tgattt	tttagc	ctctg	aaaact	ctatg	ctggc	2036						
cactgat	tccctt	gagtc	tcacaaa	acctact	ttaggt	catcag	ggcagg	aggttct	cactccc	atttt	acagat	ga	2112						
gaatact	gaggc	ctgg	acaggt	gaagt	gaccag	agagca	aaaagg	caaagg	gggtgg	gggctg	gggtg	cagtg	ggctc	2188					
acctgtat	tccca	acactt	tttgg	aggctg	agggtg	gaggat	tgtt	gagccc	aggaat	tcgag	accagc	cttag	gtg	2264					
acatagt	gagacccc	atctct	acaaaa	ataaaaa	attaacc	aggtgt	gggtgg	cacgtg	cctggg	agtc	cccagc	ga	2340						
cttggg	aggctg	agggtg	ggagg	attgtt	ttagc	ctggg	aggtc	gaggtg	tagtg	agccct	gattg	caccact	gta	2416					
ctccag	cctggg	tgacagg	gcaag	acctgt	ctcaaaaa	aaaaaaaa	aaaaaa							2465					

FIG. 8B

1 - - - - - M L O S L A G S S C V R - - - - - L V E R H R S - - - - -
1 M A A P D L L D P K S A A Q N S K P R L S F S S K P T V L A S R V E S D S A
1 - - - - - M K R - - - - - Q - N V R - - - - -

M1

TWIK-1 20 - - - - - A W C F G - F L V L G Y I L Y L V F G A V V F S S V E L P Y E D L L
TREK-1 39 I N V M K W K T V S T I F L V V V L Y L T I G A A V F K A L E Q P Q E I S O
TASK 8 - - - - - T L A L I V C T F T Y L L V G A A V F D A L E S E P E L I E

TWIK-1 53 R O E L R K L K R R F L E E H E C L S E Q Q L E O F L G R V L E A S N Y G V
TREK-1 77 R T T I V I Q K Q T E I A Q H A C V N S T E L D E L I Q Q I V A A I N A G I
TASK 38 R Q R L E L R Q Q E I R A R Y N L S Q G G - Y E E L E R V V L R L K P H K A

P1

TWIK-1 91 S V L S N A S G - N W N W D F T S A L F F A S T V L S T I G Y G H T V P L S
TREK-1 115 I P L G N S S N Q V S H W D L G S S F F F A C T V I T T I G E G N I S P R T
TASK 75 G - - - - - V Q - W R F A G S F Y F A I T V I T T I G Y G H A A P S T

M2

TWIK-1 128 D G G K A F C I I Y S V I G I P F T L L F L T A V V O R I T V H V T R - - R
TREK-1 153 E G G K I F C I I Y A L L G I P L F S F L L A G V G D Q L G T I F G K G I A
TASK 104 D G G K V F C M F Y A L L G I P L T L V M F O S L G E R I N T L V R Y - - -

M3

TWIK-1 164 P V L Y F H I R N G F S K Q V V A I V H A V L L G F V T V S C F F F I P A A
TREK-1 191 K V E D T F I K V N V S Q T K I R I I S T I I F I L F G C V L F V A L P A V
TASK 139 L L H R A K K G L G M R R A D V S M A N M V L I G F F S C I S T L C I C A A

P2

TWIK-1 202 V F S V L E D D V N F L E S F Y F C F I S L S T I G L G D Y V P G E - G Y N
TREK-1 229 I F K H I E G - N S A L D A I Y F V V I T L T T I G F G D Y V A G - - G S D
TASK 177 A F S H Y E H - W T F F O A V Y Y C F I T L T T I G F G D Y V A L Q K D Q A

M4

TWIK-1 239 Q K E R E L Y K I G I T C Y L L L G L I A M L V V L E T R C E L H E L K K F
TREK-1 264 I E Y L D F Y K P V V W F W I L V G L A Y F A A V L S M I G D W L R V I S K
TASK 214 L Q T O P O Y V A E S F V Y I L T G L T V I G A F L N L V V L R E M T M N A

TWIK-1 277 R K M F Y V K K D K D - - - - -
TREK-1 302 K T K E E V G E F R - - - - -
TASK 252 E D E K R D A E H R A L L T R N G Q A G G G G G G S A H T T D T A S S T A

TWIK-1 288 - - - - - E D Q V H I I E H D Q L S F S S I T D Q A A G M K - -
TREK-1 312 - - - - - A H A A E W T A N V T A E F K E T R R R L S V E I - -
TASK 290 A A G G G G F R N V Y A E V L H F Q S M C S C L W Y K S R E K L Q Y S I P M

TWIK-1 313 - - - E D Q K Q N E P F V A T Q S S A C V D G P A N H - - - - -
TREK-1 337 - - - Y D K F Q R A T S V K R K L S A E L A G N H N Q E L T P C M R T C L -
TASK 328 I I P R D L S T S D T C V E Q S H S S P G G G G R Y S D T P S R R C L C S G

TWIK-1 337 - - - - -
TREK-1 371 - - - - -
TASK 366 A P R S A I S S V S T G L H S L S T F R G L M K R R S S V

FIG. 9A

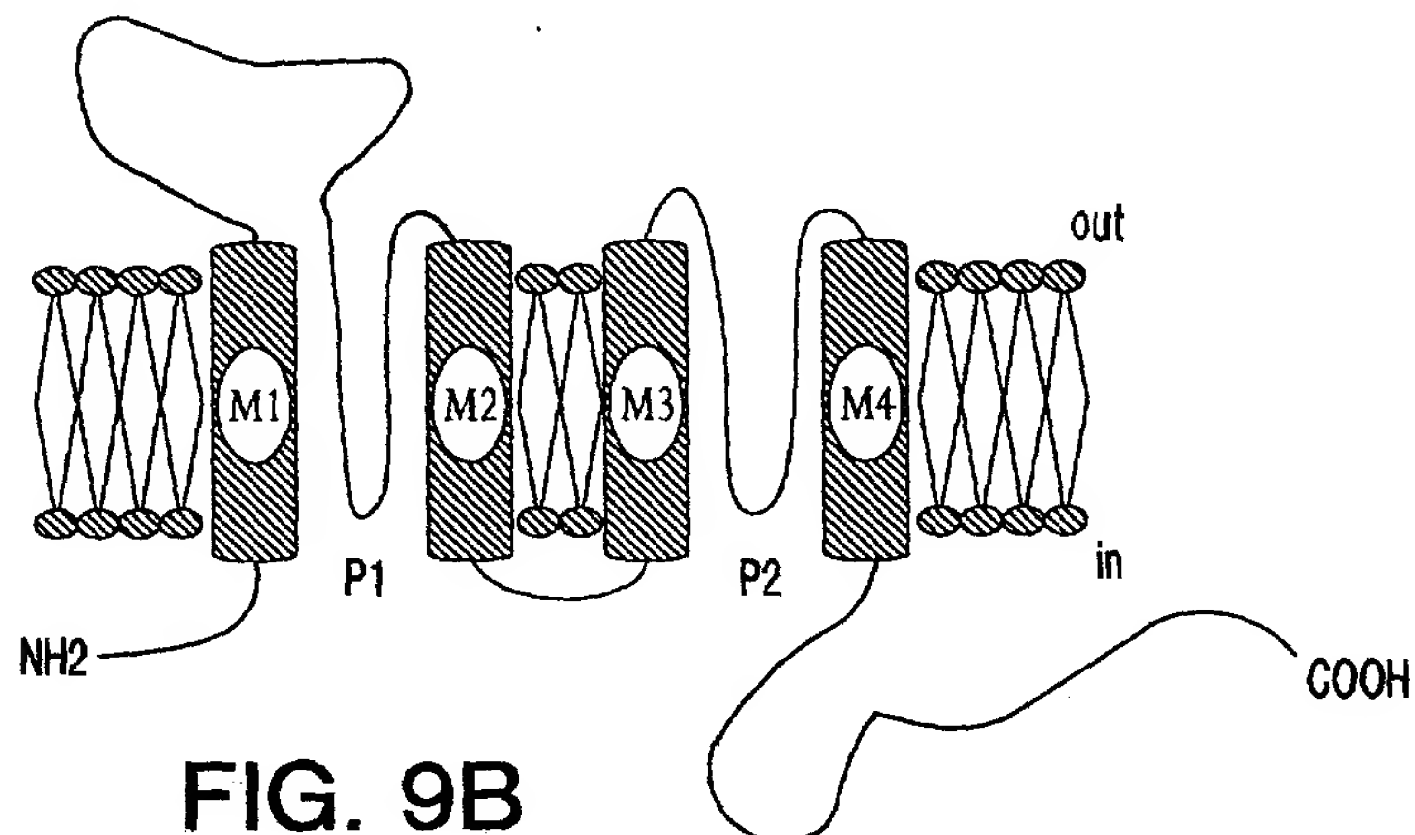


FIG. 9B

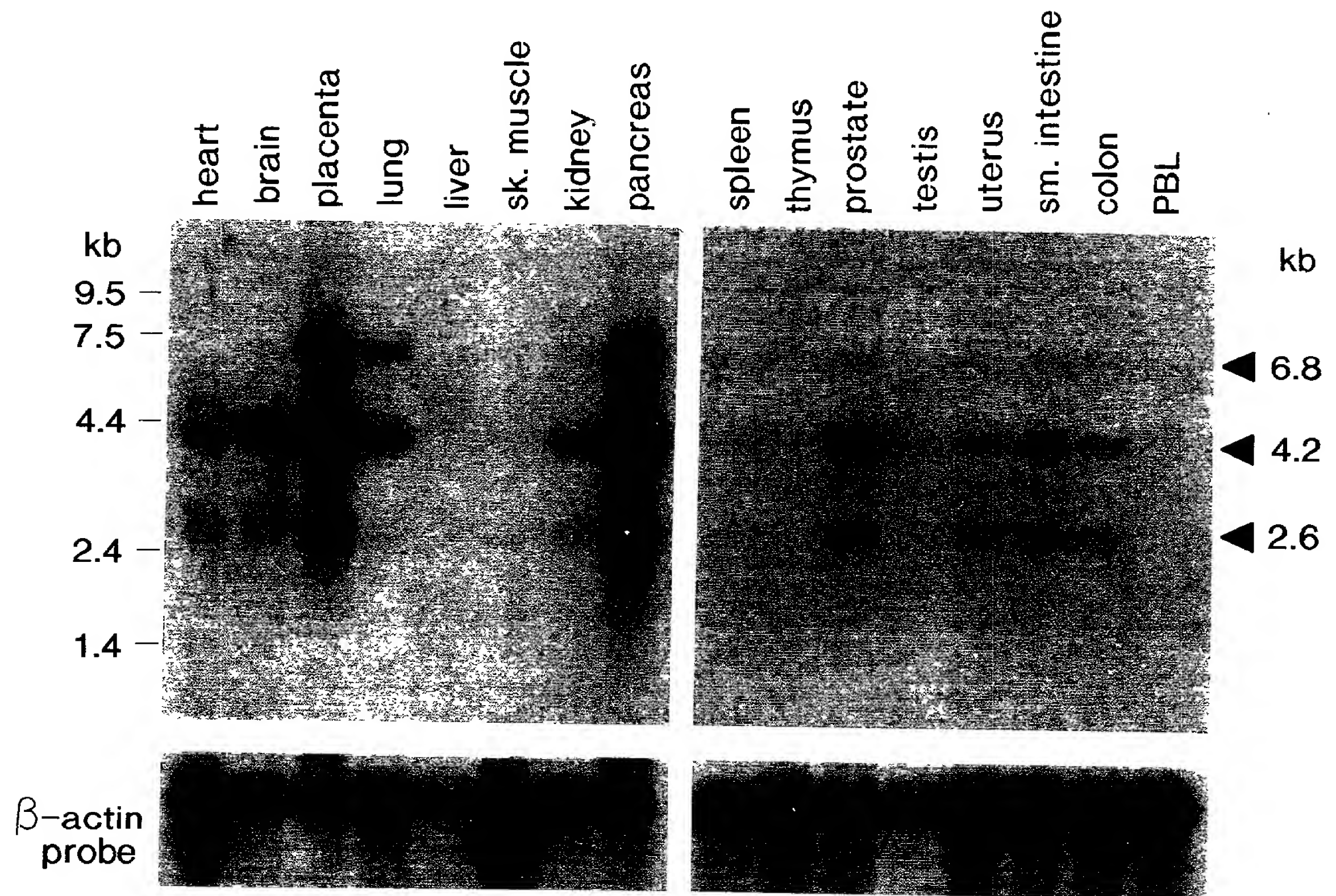


FIG. 10

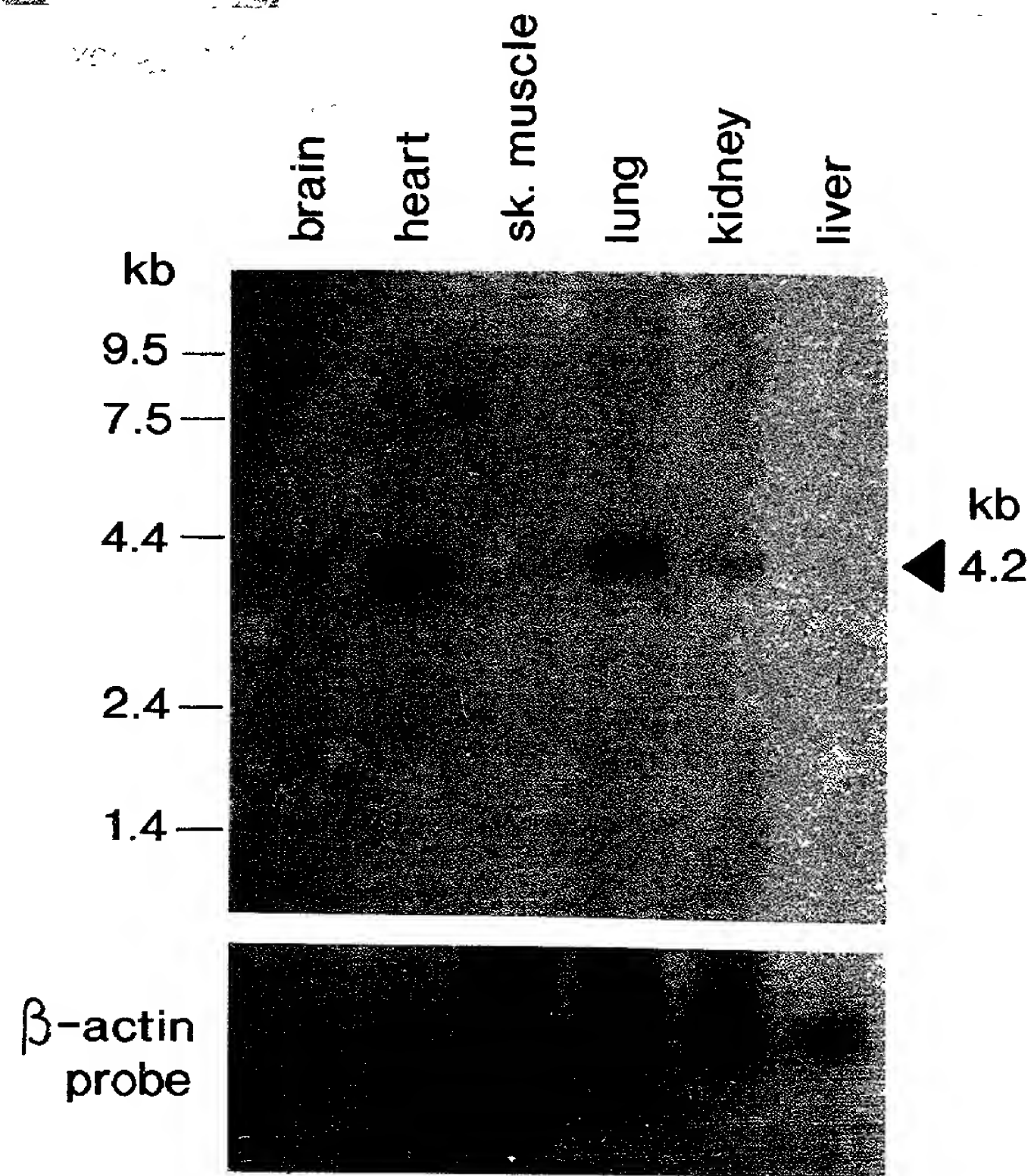


FIG. 11A

FIG. 11B

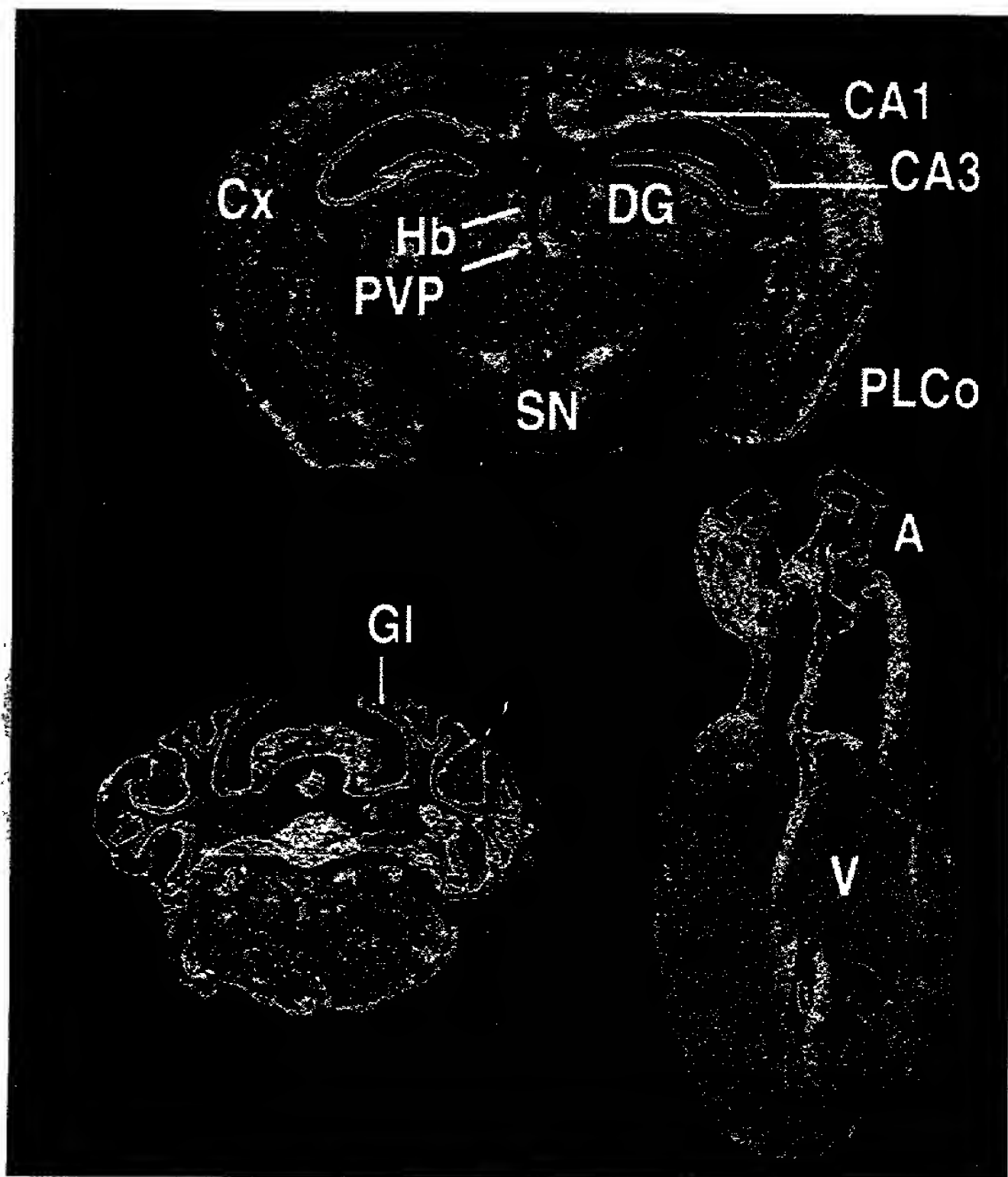


FIG. 11C

FIG. 11D

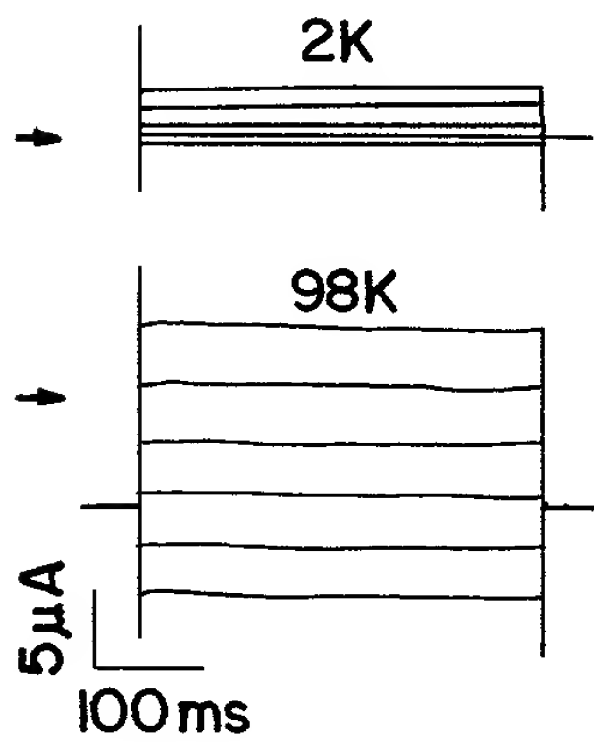


FIG. 12A

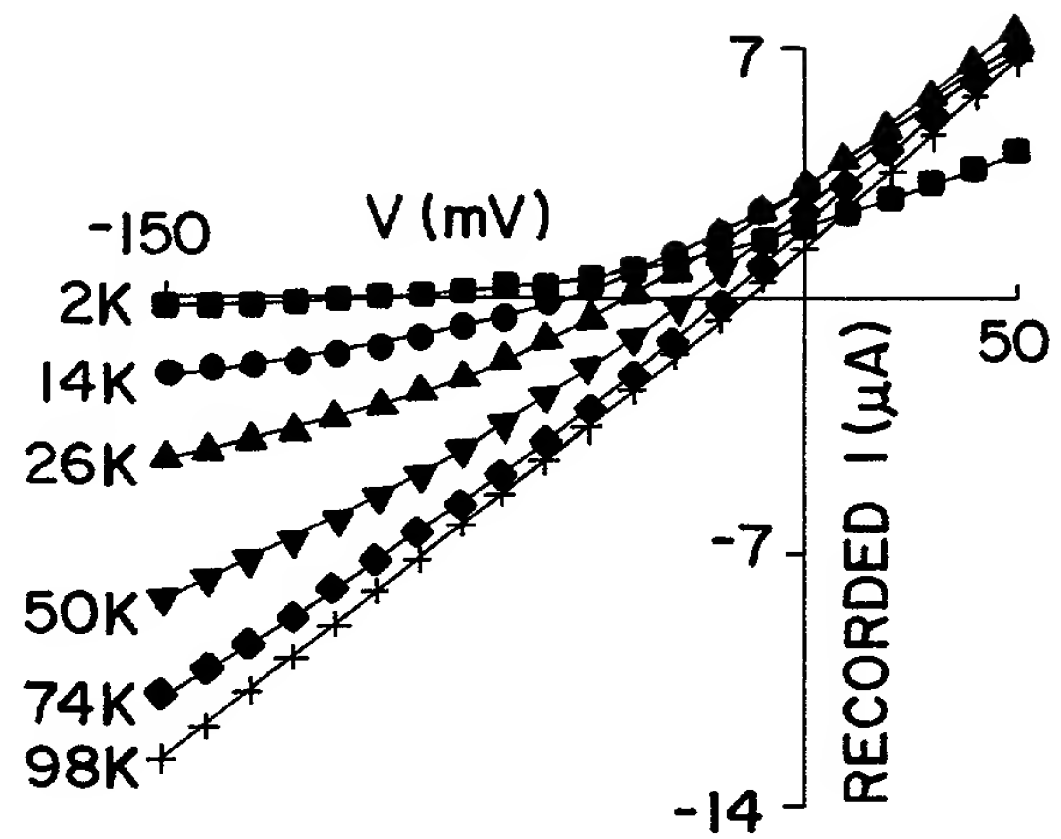


FIG. 12B

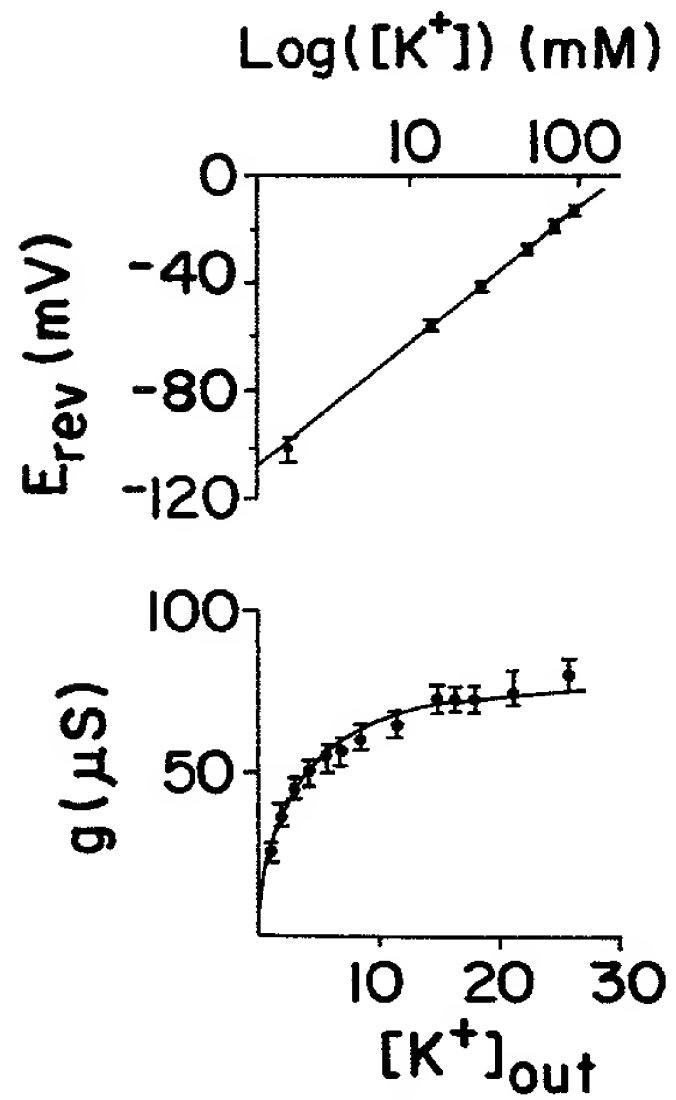


FIG. 12C

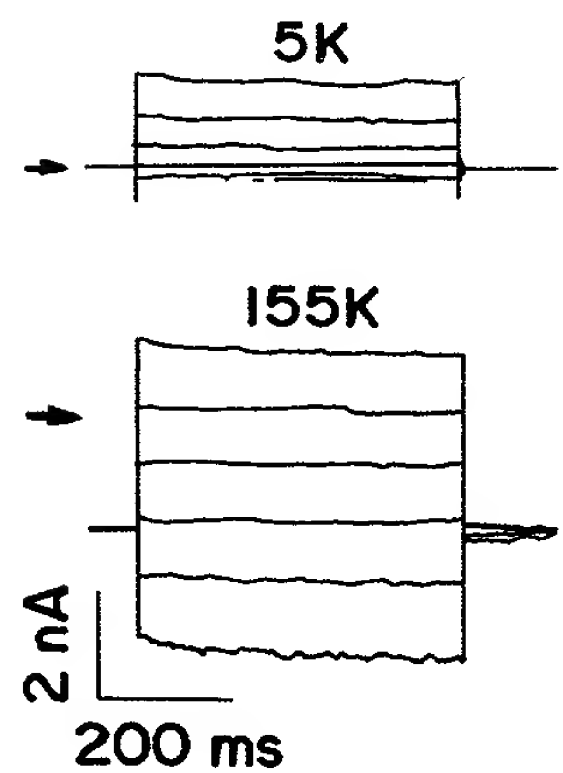


FIG. 12E

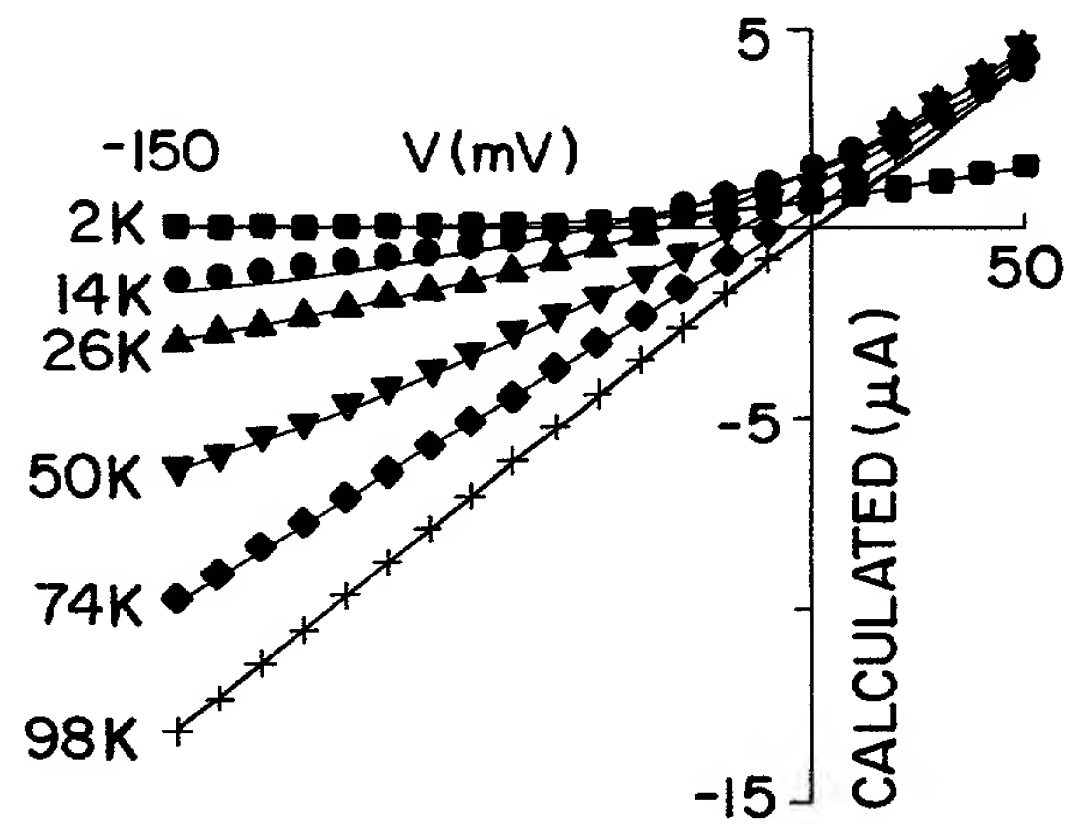


FIG. 12D

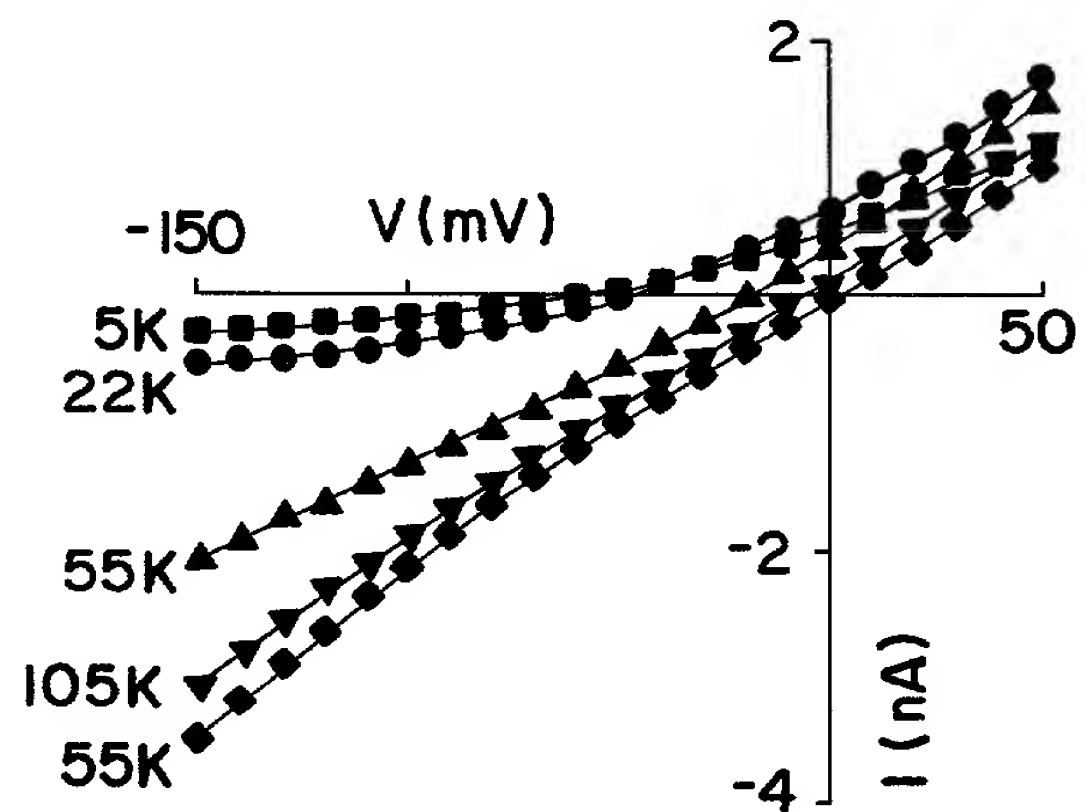


FIG. 12F

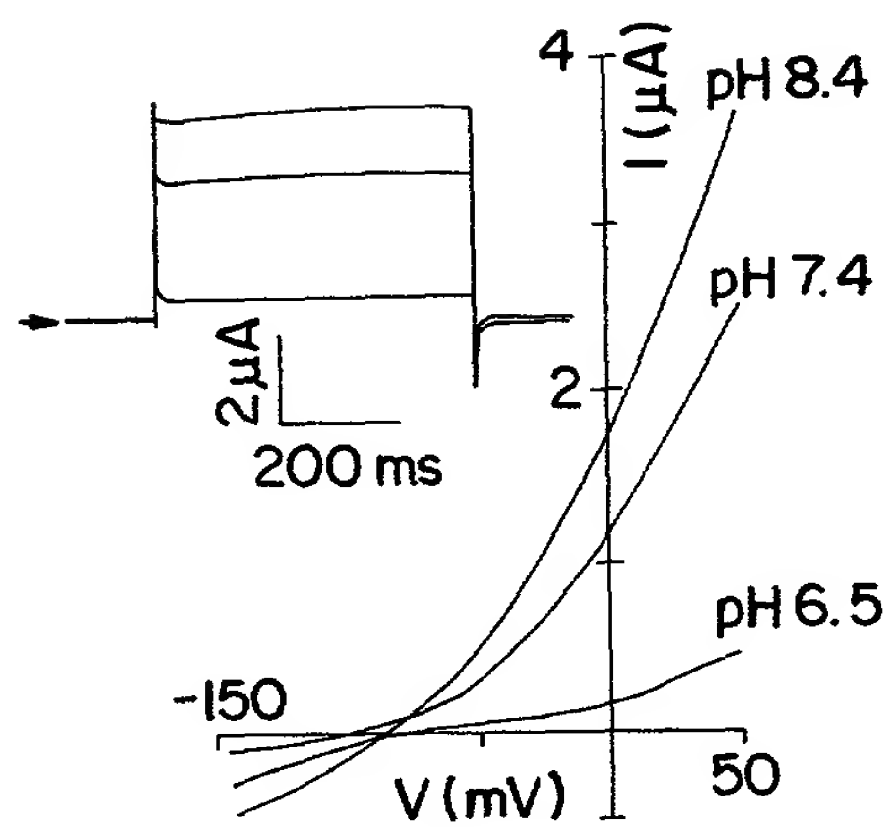


FIG. 13A

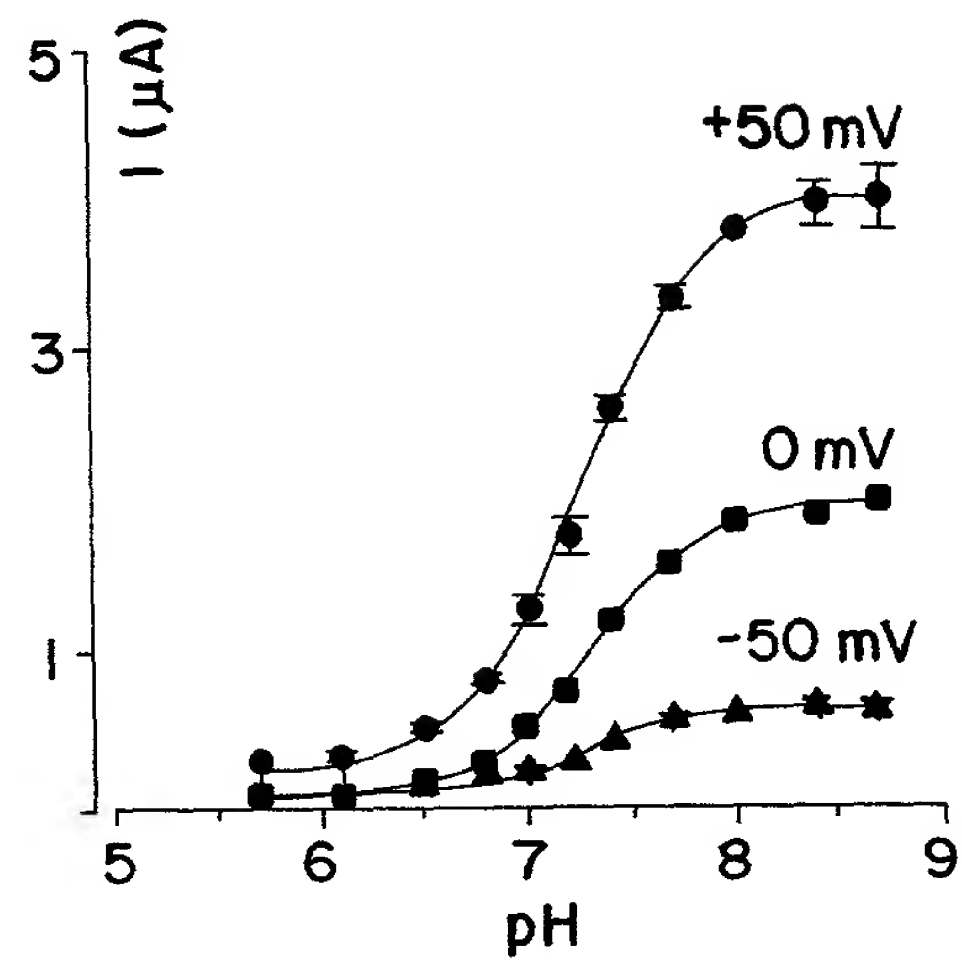


FIG. 13B

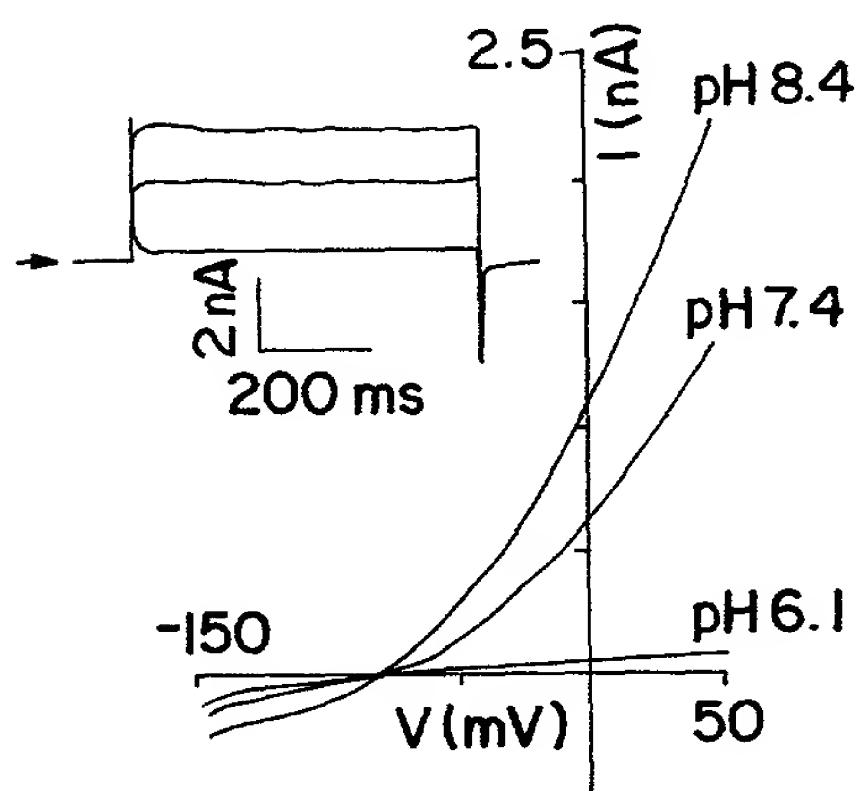


FIG. 13C

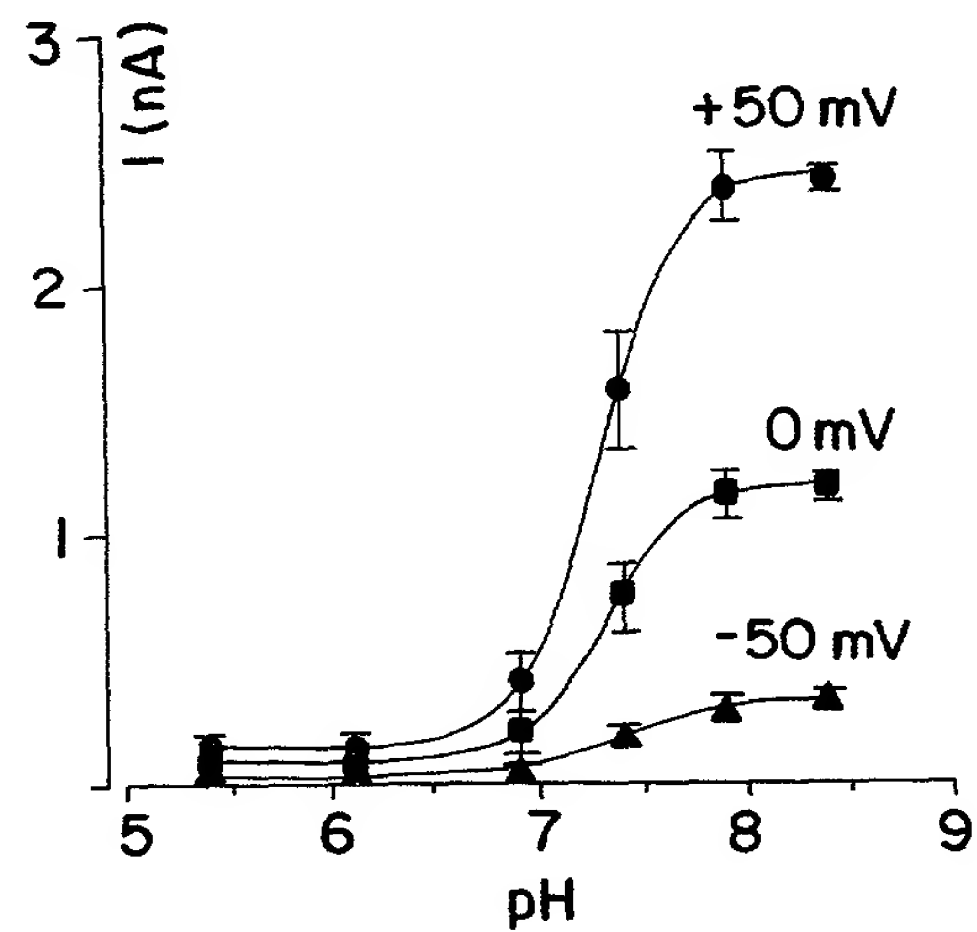


FIG. 13D